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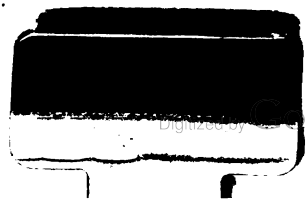

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TRANSACTIONS

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY.

PROCEEDINGS, ESSAYS AND REPORTS

AT THE

ANNUAL WINTER MEETINGS, HELD AT MADISON,

Feb. 1, 2 *and* 3, 1870, *and Feb.* 7, 8 *and* 9, 1871.

MADISON, WIS.:
ATWOOD & CULVER, BOOK AND JOB PRINTERS, JOURNAL BLOCK.
1871.

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PREFACE.

In presenting this volume of the Transactions of the Wisconsin State Horticultural Society to its members and the public, I can but congratulate the horticultural fraternity upon the success which has attended your labors during the past, and especially during the year just closed. Through the efforts of a few friends your society now occupies an independent position; your Transactions and reports are hereafter to be published in a neat and substantial manner—alone, and not the attaché of some other body—which may entitle them to a place in the library of every horticulturist, and I trust that the society will have the encouragement and support of each horticulturist, while it has the fostering care of the state. Thus may your future be made even brighter than the past, and your labors be crowned with the success they so richly deserve.

O. S. WILLEY,
Recording Secretary.

MADISON, 1871.

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LIST OF OFFICERS FOR 1871.

PRESIDENT,

J. S. STICKNEY..... WAUWATOSA.

VICE PRESIDENT,

A. G. TUTTLE..... BARABOO.

RECORDING SECRETARY,

O. S. WILLEY..... MADISON.

CORRESPONDING SECRETARY,

GEORGE E. MORROW ..... MADISON.

TREASURER,

GEORGE A. MASON ..... MADISON.

STANDING COMMITTEES:

EXECUTIVE,

M. ANDERSON ..... CROSS PLAINS
I. J. HOILE ..... OSHKOSH.
G. J. KELLOGG ..... JANESVILLE

NOMENCLATURE,

J. C. PLUMB..... MILTON.
A. G. TUTTLE ..... BARABOO.
W. FINDLAYSON..... MAZOMANIE.

OBSERVATIONS,

J. G. KNAPP..... MADISON.
G. A. KELLOGG ..... JANESVILLE.
I. J. HOILE ..... OSHKOSH.
J. B. RICHARDSON ..... SHEBOYGAN FALLS.
C. H. GREENMAN..... MILTON.

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LIST OF MEMBERS.

Anderson, M. ..... Cross Plains.
Adams, I. ..... Door Creek.
Algavin, James ..... Bluffton, Ind.
Alteman, N. ..... Stoughton.
Adams, B. F. ..... Door Creek.

Brown, B. F. ..... Madison.
Burton, C. ..... Black Earth.
Bardsley, W. ..... Ashton.
Brown, George ..... Woodman.
Bishop, S. H. ..... Woodman.
Bates, John ..... Chippewa Falls.
Blackman, M. G. ..... West Bend.
Brown Robert ..... Merton.
Brentnell, J. ..... Wingville.
Bartholomew, Wm. ..... Lodi.
Butler, A. ..... Sparta.
Barney, J. B. ..... Mazomanie.

Church, Harvey ..... Madison.
Coleman, J. C. ..... Milwaukee.
Cowin, George ..... Glencoe.
Cowrie, A. B. ..... Grant.
Chase, G. W. ..... Brodhead.
Cable, G. W. ..... Eau Claire.
Curtis, F. C. ..... Rocky Run.

Daniells, W. W. (A. M.) State University.
DeWolf, M. ..... Delavan.
Dunning, A. J. ..... Beloit.
Daniels, E. W. ..... Auroraville.
Davis, J. J. ..... Mifflin.

French, J. ..... Madison.
Findlayson ..... Mazomanie.
Flint, E. D. ..... Friendship.
Ford, J. W. ..... Mazomanie.
Flint, W. S. ..... Princeton.

Gripper, J. ..... Madison.
Gould, I. ..... Beaver Dam.
Greenman, C. H. ..... Milton.
Gange, John ..... Monroe.
Gibson, Joshua. ..... Potosi.
Grub, Joqn ..... Eagle Point.
Greenman, H. H. ..... Whitewater.

Hobbins, J. (M. D.) ..... Madison.
Hoile, I. J. ..... Oshkosh.
Hobbins, W. (M. D.) ..... Madison.
Holt, M. A. ..... Madison.
Horsfoll, J. W. ..... Milville.
Hill, John ..... Friendship.
Hoper, —— ..... Monroe.
Hills, Edwin ..... Lincoln.
Hunt, S. ..... Evansville.

Judd, R. J. ..... Oshkosh.

Kellogg, G. J. ..... Janesville.
Kiser, C. ..... Madison.
Knapp, J. G. ..... Madison.

Lawrence, F. S. ..... Janesville.
Lampert, Z. W. ..... Eau Claire.
Lampert, J. F. ..... Eau Claire.
Lawton, H. G. ..... Brodhead.

Moody, N. J. ..... Madison.
Morrow, G. E. ..... Madison.
Morrow, D. M. ..... Madison.
Mason, G. A. ..... Madison.
McClay, James ..... Madison.
Moulton, Riley ..... New Lisbon.
Markham, J. S. ..... Fordville.
Mythaler, C. ..... Monroe.
Melven, Rev. C. T. ..... Sun Prairie.
Mosley, J. W. ..... Reedsburg.
Moulton, S. ..... Mazomanie.
McAfee, H. H. ..... Freeport, Ill.

Plumb, J. C. ..... Milton.
Plumb, T. D. ..... Madison.
Park, W. J. ..... Dodge's Corners.
Pitman, Frank ..... Wankesha.
Peffer, G. P. ..... Pewaukee.
Palmer, N. N. ..... Brodhead.

Robbins, G. ..... Mazomanie.
Roe, J. P. ..... Oshkosh.

Swain, S. G. ..... Baraboo.
Stevens, J. T. ..... Madison.
Stickney, J. S. ..... Wauwatosa.
Swain, Geo. G. ..... Baraboo.
Stimpson, Chas. ..... Milville.
Stimpson, M. Sen. ..... Milville.
Sherman, J. T. ..... Brodhead.
Seltzer, L. ..... Monroe.
Shook, S. ..... Monroe.
Simonds, B. ..... Baraboo.
Sadler, W. L. ..... Lincoln.
Shields, J. T. ..... Eau Claire.
Seymour, A. M. ..... Mazomanie.

Tuttle, A. G. ..... Baraboo.

Waters, Chas. ..... Springville.
Willey, O. S. ..... Madison.
Wilkins, F. B. ..... Bellefontaine.
Wedgewood, G. R. ..... Monticello.
Wilcox, E. ..... Trempealeau.

Zumbremnen, —— ..... Monroe.

NEWSPAPERS.

Dodge County Democrat Juneau.
Oshkosh Journal ..... Oshkosh.
Plover Times ..... Plover.
La Belle Mirror ..... Oconomowoc.
Grant County Witness .. Platteville.
Richland Co. Republican Richland Center.
Baraboo Republic ..... Baraboo.
Oshkosh Times ..... Oshkosh.
State Journal ..... Madison.
Democrat ..... Madison.
Milwaukee Sentinel .... Milwaukee.
Western Farmer ..... Madison.

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AN ACT

TO

PROVIDE FOR THE INCORPORATION OF THE WISCONSIN STATE HORTICULTURAL SOCIETY, AND THE PRINTING AND PUBLISHING OF ITS TRANSACTIONS.

The people of the State of Wisconsin, represented in Senate and Assembly, do enact as follows:

SECTION 1. The Wisconsin State Horticultural Society is hereby declared a body politic and corporate, and by that name it shall be known in all courts and places whatsoever.

SECTION 2. The objects of the Society being to improve the condition of horticulture, rural adornment and landscape gardening, it shall be allowed for these purposes to take, hold and convey real and perronal estate, the former not exceeding in value five thousand dollars.

SECTION 3. The corporation shall possess all the powers and privileges conferred, and be subject to all the liabilities imposed upon corporations, by chapter seventy-eight of the revised statutes, so far as the same may be applicable.

SECTION 4. The State printer is hereby directed to print on good book paper, fold, stitch and bind in muslin, (uniform in style with the last volume published, of the transactions of the State Agricultural Society), two thousand copies of the transactions of the State Horticultural Society, embracing the years 1870 and 1871; *provided*, the number of printed pages of said volume shall not exceed two hundred, and to deliver the same to the Superintendent of Public Property, to be by him distributed as follows, to wit: Three copies to each member of the Legislature, fifty copies to each county or town horticultural society, who shall report its organization with officers elect, and number of members, with an abstract of its proceedings, for publication in said volume to the Secretary of the State Horticultural Society, and fifteen copies to each county agricultural society, twenty-five copies to the State Agricultural Society, twenty-five copies to the State Historical Society, fifty copies to the State University, and all remaining copies to the State Horticultural Society

SECTION 5. Hereafter or until the Legislature shall otherwise order, the transactions of the Wisconsin State Horticultural Society, together with abstracts of the reports of other horticultural associations of the State, so

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far as the same may be furnished, shall be annually printed, published and distributed in like manner and number as provided in section four of this act, on the order of the Governor.

SECTION 6. So much of chapter 74, general laws of 1868, sections 2 and 3, as provides for the publication of the transanctions of the State Horticultural Society in connection with the State Agricultnral Society, and any additional copies of the same, is hereby repealed.

SECTION 7. This act shall be in force from and after its passage.

Approved March 24, 1871.

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TRANSACTIONS

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY.

1870.

TUESDAY, February 1, 1870.

President Dr. JOSEPH HOBBINS called the society to order at 7½ P. M. About fifty members in attendance.

W. T. LEITCH, President of the Madison Horticultural Society, gave the

ADDRESS OF WELCOME.

Mr. President and Gentlemen of the State Horticultural Society:

Your annual assembling in this city has already become an event looked forward to with interest and pleasure by the local society of this city, which I have the honor to represent, and they have imposed upon me the pleasing duty of expressing to you their hearty welcome and sympathy in the objects which you have at heart. The field which you have entered is a wide one, and certainly needs to be well and fully occupied in this state. Our climate is such, that to make horticulture successful, requires a large amount of study, observation and patient scientific investigation. We have enemies in the winds, and in the great extremes of heat and cold, and it is for you to inform the people of this state how to fortify and protect themselves against them; you have not only to point out the enemy and the means of defense to the good people of the state, but your mission is also to incite them to avail themselves of the means of defense at their disposal. The man who makes two spires of grass to grow where but one grew before, has been well called a public benefactor, and the man, or body of men, who shall induce the farmers of this state generally to protect their farms, orchards and homes by belts of timber, and shall induce them to set apart a portion of every prairie farm to the growth of fruit trees, and who by word and deed shall cause the people to look upon every man who wantonly wastes and cuts trees and timber as a public enemy; who by precept and example shall persuade the people to adorn and beautify their homes with flowers

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and shrubs, and who by experiments and study shall ascertain and point out to them the fruits that will grow and thrive in this state, and shall teach how to grow and care for them, so that they can plant with a certainty of eating of the fruits thereof in due season, will be entitled to the eternal gratitude of the people of the state of Wisconsin; and the benefactions which this and kindred societies, if true to their vocation, may bestow in wealth, happiness and comfort upon the people of this noble commonwealth are incalculable.

Appreciating to the fullest extent the labor you have to perform, and believing that the members of the State Horticultnral Society are possessed with the noble zeal to worthily perform it, the members of the Madison Horticultural Society bid you welcome to this city—knowing that your discussions will instruct and encourage us in our work.

It is with great pleasure that I inform you that the Madison Horticultural Society was never in a more prosperous condition than at the present time. The interest in its work and discussions is constantly increasing in this community. During the last year we have had large accessions in membership, many of them of much scientific and practical knowledge of horticulture. At our public exhibitions there has been constant increase in the number of exhibitors of plants, flowers and fruits, and we believe we can with truth say that the evidences of our work can be seen in the increasing beauty of our city and the homes of our citizens.

Then, with the fellowship of a common object, we offer you the right hand of brotherly greeting—trusting that your brief sojourn here may be as pleasant and agreeable to you, as we know it will be profitable to us.

President HOBBINS briefly responded, and read his

ANNUAL ADDRESS.

Gentlemen:—In looking over the reports of several state horticultural societies for the past year, I find that I have been trespassing upon your good nature by the lengthiness of my annual addresses. Thus admonished, and more especially as I have nothing to present to your notice on this occasion requiring anything more than ordinary consideration, my address to-night will be as brief as custom can demand.

Then, gentlemen, to commence with, let me congratulate you as a society upon your last exhibition, which, in spite of an almost unprecedented wet season, preceded by an equally unprecedented season of drought and an almost snowless winter, was distinguished by a better collection of fruit than ever before exhibited in this state. The marked feature, however, of the exhibition, to horticulturists, was the great variety of good and new fruits originated within the state—fruits eliciting the highest praise and expressions of astonishment, again and again repeated, from Dr. Warder and from members of our own society. I would also offer you my congratulations upon the very complimentary manner in which your last year's discussions and papers have been received by the horticultural press and the public. Such a report as your last is a credit, an honor, and a material service to the state. Nor is it less a matter of congratulation that the most friendly and harmonious

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feeling continues to exist between the parent and the local societies, as well as between the state agricultural and our own society. I wish, gentlemen, that I could also congratulate you upon another interesting feature of our society. I mean the experimental gardens. All I can say of them here is that the trees, shrubs, vines, plants, etc., are flourishing, but that few additions have been made to them since our last meeting.

And now, with your permission I will give you some of the suggestions which have occurred to me from time to time in relation to the interests and the future of the society. We shall want a larger hall for our next annual exhibition, and I have little doubt but that we can have it, or, at least, have our present hall enlarged, if we ask for it. This is a matter that should be looked to early, for the reason that much dissatisfaction was created among the exhibitors at the last show by the want of space, and among the visitors from the same cause. And I would like, now that the grounds have become the property of the public, to see the building permanently ornamented with horticultural surroundings, which can be done partly by drawing upon our experimental gardens and partly upon your nurseries.

From the great and increasing variety of new fruits presented at our fairs, particularly at the last one, it has become a matter of the greatest importance that our committee on Nomenclature should have a considerable addition made to the number of its members. And that it should be required to *name* new varieties, not already named, but originating within the state, which are entered for competition, and to correct the errors in naming, always to be found among the old varieties—and to do this as far as possible before the judges commence their labors or make their awards. For various reasons I wish to urge this point. Our premium list is always headed with the condition—that all fruits entered for competition must be named. Yet at the last show I saw bushels of apples unnamed entered for competition and premiums awarded to them. I can neither understand how justice can be done to exhibitors, or instruction—the great object of such shows—be given to the public by such a manner of proceeding. The rule requiring all fruits entered for competition to be not only named, but correctly named, should be rigorously insisted upon by the judges. It is time that the society began to sweep away the confusion of conflicting of names prevailing among our fruits.

Hearing as I have, and as undoubtedly we all have, of the continuous failures of fruit tree planters in this state, I have per force, as it were, been led to think much of the proper remedy or preventive; and it has occurred to me, again and again, that it would be good policy on the part of this society to urge upon the public, or at least upon that large portion of it beginning fruit-growing, but not conversant with horticulture, a different line of practice from that now in vogue in the selection of varieties. My own opinion is that a radical change might be made in this respect with great profit to all concerned—the legitimate sellers and the buyers. The policy I venture to suggest is this: The planting of such fruit trees, and of such fruit trees only, as we know will grow an eatable fruit in any and all the peopled parts of this state. It is almost in vain, as far as I can judge, to try to stop the indiscriminate purchasing and planting of fruit trees, now everywhere observable in this northwest, by any other and less radical method. Tree peddlers and agents, eastern hor-

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ticultural and agricultural papers and journals are doing infinitely more damage to the progress of horticulture in Wisconsin than can easily be believed, except by those acquainted with the matter. Our climate is taxed with an immensity of mischief to our orchards and gardens and vineyards that is solely attributable to the misdirection of outside writers and the cupidity of outside nurserymen; for it is in vain for these latter to claim that they are not responsible for the doings of tree peddlers. If nurserymen would not send out these notorious bark-lice gentlemen, or connive at their doings, then would it be impossible for them to invade us. Comparatively speaking, but few of the tree-planters in our state receive our reports, or even take an agricultural or horticultural journal; consequently they are at the mercy of the traveling agent, who too generally sells that which he has to sell, irrespective of its adaptability or name. As a natural result, most of his stuff dies, or living, is worthless, and the buyer, discouraged, refuses in the future to buy trees. Nor does the evil effect stop here. It spreads to his neighbors, and a public injury is thus inflicted. The practice for this state should be, as it seems to me, to begin with the purchase only of the most hardy trees—something that will grow to a certainty, and that will bear to a certainty, and that to a certainty can be used by the family with pleasure and profit. Therefore, in preference to planting trees with fine names, and getting nothing from them but disappointment and disaster, I do not hesitate to recommend beginners on a small scale, farmers with small farms, and others not conversant with fruit trees, but who want to grow apples without trouble and without risk of failure, to begin with the Siberian. We have a variety of them; they will grow anywhere with us; they are good and early bearers, and though called crabs, are, at least some of them, like the Transcendent, Hyslop, etc., well worthy the name of apples—good fruit. This is what I call beginning at the right end—at the bottom and not at the top of the ladder. Let us teach people to grow that which they can grow with a certainty, and afterwards they will learn to select for themselves. I would educate up from the Siberian, and not, as is so often the case now, down to nothing. Then, in order that the next step may be taken just as safely, let us see to it that our reports, with our list of recommended fruit trees, are scattered broadcast over the state, and that our nurserymen, in their circulars, recommend the taking of our own agricultural and horticultural papers, where our people will find just the kind of information they want—I mean local information. And again, let our nurserymen direct their efforts, for some years to come, to the raising of just such few varieties of fruit trees as we know will grow, rather than expend their efforts in raising a great variety, whose living or worth is uncertain. By thus confining their business and concentrating their energies and capital, my belief is that our people can be supplied by our own nurserymen; and this is the most powerful weapon, *home supply*, to use against tree peddlers, agents and outside injurious influences. If my views are extreme, so too are the evils I speak of. I must confess, gentlemen, that it is with considerable hesitation that I have brought forward this Siberian recommendation, and I do not know that I should have dwelt upon it so much, had I not found myself supported by so much better a judge in such matters—I mean Dr. Warder. "You have," said Dr. W. to me, at the state fair, while conversing about this very plan, "to educate your

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people in horticulture, and in order to do so, you must begin at the beginning, and not at the end. Give them fruit, and they will soon want good fruit." One word more in relation to what I have just said. In expressing my opinion about the influence of outside horticultural papers and journals in this state, I would not have it understood that the slightest disrespect is intended, or that my design was to prevent their circulating among our people. I am simply contending that their horticultural directions are not applicable to this state, and that our best horticultural teachers are to be found among the most experienced fruit-growers of our own northwest.

The suggestion I have just made may be viewed differently by different members of this society, but the suggestion I have now to make will, I know, meet with your general approbation. We have long felt the need of a state entomologist. As horticulturists, we see and feel the importance and absolute need of such an officer—more so than does any other part of the community. Some of the older states, and indeed some of the younger states, have made such appointments; and I trust the time will soon come when our own state will follow their wise example. We are an agricultural people, and as such are afflicted with almost every plant-destroying insect on this side of the continent; and while other countries and states are seeking, with success, for means to diminish or avert the ravages of such plagues, we should not be folding our hands, awaiting for something to turn up, but be following the examples of our more intelligent neighbors. Therefore, I suggest that before you separate you elect, as entomologist to the State Horticultural Society, Professor Daniells, of the Wisconsin State University. I venture to make this recommendation simply because the professor is the best man I know of for the place, and because I know that he will spare no pains to serve the society and the people. I believe, also, that it will be greatly conducive to the interests of the horticultural and the agricultural societies of this state were you to appoint a standing committee on meteorology.

One more suggestion and I have done. We all know of our failure, as a society, to procure an appropriation last winter from our legislature for the purpose of carrying on our experimental gardens, and for the advancement of the science of horticulture in this state. We were kindly recommended to the legislature in the governor's message; we had been earnestly recommended to the favorable consideration of the legislature by President Chadbourne, of the State University; we had the assurance of the leading members, both of the Senate and Assembly, of their support, and the recommendation of the committee on agriculture, who reported our bill, and yet we failed. I could tell you the secret of our failure. It was caused by a little accident common enough in all our houses. The Assembly was a little out of temper on the day our bill was introduced, and therefore did just as we all do in the like state of things—what it ought not to have done. The speaker, whilst expressing his regret to me that the bill had not passed, assured me that had it been brought up a day sooner or later it would have carried. Now, so far as I can judge, there is nothing very discouraging in all this. We must repeat the attempt, and renew it again and again, if necessary, until we are successful, as successful we certainly shall be if Wisconsin remains an agricultural state. The horticultural

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interest is the interest of agriculture. Practically speaking, if they are not one, they are too intimately related to be easily divided.

The efforts made by this society to advance the interests of horticulture in this state are everywhere acknowledged and appreciated, not only by our own people—as is shown by the formation of a number of local horticultural societies, the increasing crowding of visitors in our horticultural hall at the state fair, the crowding of the legislative halls to listen to our annual discussions and addresses, as well as for the demand for our transactions (published, be it remarked, by order of the legislature for the benefit of the people); but beyond and beside all this, by the people of other states, as is evinced by the very flattering things said of us in their press and state societies. So with regard to the experimental gardens, to speak of the liberal and handsome donations made to it by our own members, may scarcely be in good taste; but it is nothing more than simple truth to say that this society has originated and conducts the first and only state experimental horticultural garden in the United States; that it is in part planted by the generosity of our members and in part by handsome contributions by nurserymen in different parts of the country. To state also that free horticultural lectures have been given by members of this society to the students of the State University; that it is one of the cherished objects of the society, not only to teach horticulture theoretically but practically, but to disseminate through these students, and the members of the legislature, and the local horticultural societies, all the information to be gained by experiments in these gardens, as well as the trees, vines, plants, shrubs, etc., which are found suited to our state; in fact, to imitate to some extent, but on a more impartial basis, the action of the Agricultural Department at Washington—is but doing simple justice to ourselves, and is, in fact, due to the legislature whose confidence and assistance we are seeking.

Such, it seems to me, should be the course of argument addressed to our legislative bodies. Let us show them that we are earnest, capable and disinterested men, doing a good, useful and necessary work. Let us give to the state our services as we have done, and be the first to donate to the people, and we shall find that the legislature will do as the people have already done—acknowledge our services and comply with our wishes, as they are already pledged by implication to do, in the publishing of our transactions. If our transactions are worth publishing by action of the legislature for the benefit and honor of the state, surely our practical labors in the experimental garden are equally worthy of recognition by the same intelligent body. Theory and practice should not, as it seems to me, be separated by legislation,

There is another reason why the state should encourage the experimental garden. Horticultural experience and experiment everywhere show that plant-life depends for its character upon the conditions surrounding it. Not only climate and soil, elevation and exposure, a dry and a moist atmosphere, but also an infinity of circumstances—all deserving of study, because all playing an important part in determining the very color, form and character of what is grown. Such influences, with their relative effects, are everywhere acknowledged and taken advantage of by the scientific horticulturists of the old world. And let me ask, to whose benefit does

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such knowledge accrue if not to that of the people? If I originate a new fruit or improve an old one, is it not an additional luxury to you who eat it—another contribution to, and article of business—another means of creating wealth as well as of imparting pleasure and giving food? Is there not, then, a manifest propriety in the state lending its aid in these researches, made by men whose sole object is the benefit of the state itself? But the response may be to the effect that such matters are best left to individual enterprise. Such a response, however, carries with it a very transparent contradiction, in the fact that many of our states—Illinois on one side of us and Iowa on the other—acknowledge by a state appropriation the value of horticulture to their people, while the general government has long, at a considerable cost, imported new seeds and fruits, and plants, and by its experimental garden, at Washington, sought to introduce and acclimate them. All I ask is, that each of the states follows the example and helps the good work of the general government.

With these views, with some of the facts and merits of the case before us, it becomes my duty to recommend another earnest appeal to the legislature for an appropriation to this society for the purpose of carrying on the state horticultural experimental garden, and for the advancement of the science of horticulture in Wisconsin. We are but a department of the State Agricultural Society, and consequently are without funds for such a purpose. The University is in a like condition. So that, unless we can obtain assistance from the legislature, our gardens, so prosperously begun, must, to the dishonor and detriment of the state, become a loss and a failure.

In conclusion, gentlemen, it becomes my painful duty to allude to the death of the late Hon. B. F. Hopkins, member of congress for this congressional district, and some few years ago president of this society. Mr. Hopkins was not a horticulturist, but he was a friend to horticulture and a helper in everything calculated to promote the interests of his adopted state. He accepted the position of presiding officer over this society for the purpose of giving it a start and a stand in the estimation of the people, and I speak of him the more feelingly, that he was not only a personal friend, but that it was by his advice that you did me the honor to elect me your president. He has gone from among us, a tree withered in its prime—and for this reason the more lamented and the better remembered.

Mr. O. S. Willey then read the

REPORT OF THE RECORDING SECRETARY.

Mr. President and Friends of Horticulture:

The official position which I occupy renders it my duty, as well as pleasure, to address you at this time, reporting the year's progress and the prospects and desires of the future. But as I discharge this trust, I assure you that I also, like your President, shall endeavor to be brief; and ask your attention and careful thought to the lessons of the hour.

It is gratifying to know that pomology has not been stationary, but has kept at even pace, and even in advance, of the other arts and sciences of the day. Few, if

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any, of the enterprises of the day exhibit so marked improvements as that of the culture of fruit. The doubt which rested upon the many ten years ago is now scarcely mentioned—but instead, men are talking of their fruit farms, and calculating upon the returns of their orchards and vineyards with as much certainty as any other farm crop. With a single exception, 1869 has been remarkably fruitful. The apple crop was very heavy; all small fruits very abundant, except grapes, and also, excepting grapes, were well ripened. It is one of the duties of this meeting to inquire what was the cause of the insipidness of most small fruits the past season, and the partial or total failure of the grape crop. Another marked token of the signs of the times is the formation of horticultural societies. This association was formed in the fall of 1853—but sixteen years ago; struggling for an existence—half dead, with the other half but little better for twelve years—your life-span may be reckoned to date from 1865. Since then, how changed the scene! New life, new energy, new sorts—and all move on with a record none need be ashamed of; and with this progress, local societies are springing up in all parts of the state. Six have previously been reported; two have been formed during the past year, viz: Milton, Rock county, and Leon, Richland county. An effort should be made to have all these societies more efficient auxilliaries to the parent society. Still one more sign of progress is in the demand for horticultural reading, and we are glad to report that the supply equals the demand. With a decided improvement in the old and reliable *Western Farmer*, we have now a new candidate for public favor, the *Western Pomologist*, published at Des Moines, Iowa, by Mark Miller; and I am glad to note that a worthy and esteemed colaborer of our society and one of its founders, is the editor and proprietor. These are omens of good, and may their influence never be less, but grow stronger and more extensive till they shall be a weekly visitor to every family in the state! Then will horticulture and its kindred labors prove labors of love. Meanwhile, let nothing dim your brightest prospects, and ever hopeful, go on—

> "Give new endeavors to the mystic art,
> Try every scheme, and riper views impart.
> Who knows what meed thy labors may await?
> What glorious fruits thy conquests may create."

The marked feature of the year has been the bringing to notice of new varieties—although this is not confined to the efforts of 1869 alone, but is the culmination of a series of years. This progress I would note as one of the dangers of the times. Within a comparatively short space of time fruits have increased almost beyond belief; for instance, but a few years since two hundred was the limit of the apple list. Now Mr. Downing enumerates 1840. Pears have increased from a little over 200 to about 1000; cherries from 75 to nearly 200; plums from about 100 to nearly 300; currants have thribbled; raspberries six times as many now as formerly; strawberries number 250, or more than seven times the former catalogue lists; of native grapes we have nearly 150, or about twelve times the number of fifteen years ago. Of other fruits there is as marked an increase, so that turn which way we will, new seedlings are offered—each thinking he has an acquisition. Some are fair to good—but the large proportion, of course, are no better nor equal to the

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named sorts now in our books. In view of this, too great caution cannot be used in accepting and naming the seedlings placed upon exhibition. For, while such labors are worthy of all commendation as triumphs of the noblest ambition, conquests which scar not, nor leave an unhealed wound, upon memory or heart, nor stain upon the hand, and are worthy the life and labors of any man or woman, yet the danger is ever here, viz: of bestowing names unworthily, or in too great haste, or of re-naming a sort already in the books.

I would call your attention to the labor of a thorough revision of the premium list. It is very much to be desired that this be done while the society is in session, that all may participate in its revision; and not as heretofore, be left to the executive committee. There should be some radical changes made, many of which have been suggested from time to time, and more probably will be while you are in session. But whatever may be the result of a general revision, we would respectfully urge the using of as large a list as practicable of horticultural journals. The reason of this is two-fold. It in a measure compensates the publishers to whom we are indebted for much service by way of advertising, and without whose aid we could hardly survive. Then again, it is a means of circulating knowledge, and many may thus become readers of the horticultural press who had never done so before. So that, while we help the publisher, we are also educating the people to a stronger desire for horticultural progress.

A special feature of addition to the premium list should be that of encouraging a system that shall give us better reports of committees. As worthy of imitation in this respect is the report of the Boston Horticultural Society. It is not enough for the world to know that one takes the first premium and his neighbor none. The objects are, or should be, two-fold, viz: to educate the people, and to encourage horticulture. We are free to say that the masses do not know a good, or perhaps better, a perfect specimen of few sorts, hence the labors of examining committees may well be given to writing out not only the reasons why Mr. K. takes a first premium but *why* others have taken none. It is not enough to say because they were the best; we want to know why others were not just as good. Was it because they were over size or under size? I have only time to allude to it here. Many things will suggest themselves to you in this connection, and I would urge that a premium be offered of sufficient amount to encourage good reports from the chairmen of the several committees. Such reports need not be presented till the winter meeting after the fall exhibition—being then in time for publication in the volume of transactions. It is a subject worthy your consideration, and a source of gratification to the future officers, if the manner of arranging the fruit at the fairs should be discussed at some length. In the department of cattle and horses, they are classed as best Roadsters, best Devons, etc. Now is it not well to inquire if we may not have our fruit similarly classified. Best three, or five, or ten sorts, all to occupy a table by themselves, and with a suitable card printed thereon to designate the place the fruit occupied in the premium list. This manner has but one objection to it, viz: that mentioned by our friend Mr. Stilson, in a late number of the *Western Farmer;* and while this (the handling of fruit by visitors) is worthy of all consideration, yet are not the advantages more than sufficient to compensate. The great convenience

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of this system to the various committees, and the better opportunity for visitors to study and compare sorts competing for the prize—it being one of the chief objects of the society to afford facilities for the 40,000 visitors to see and inform themselves—I say will this not more than counterbalance the inconvenience spoken of above, which inconvenience I hope might be remedied before another fair, by more room to our building, thus enabling us to give a wider space for the exhibitors' aisles? With this brief notice of change, for the fall exhibition, I pass to what I have no doubt you are all anxious to hear something of, viz:

The Horticultural Gardens of this Society.—And I am sorry to be obliged to report any less favorably than in my last annual report, and perhaps I have no reason to do so, yet, under the present arrangement, we cannot say that we are likely to get the benefit of such a garden as the founders have a right to expect. The reasons of this are obvious to those who have participated in its management, and now, without a complaining spirit, I shall speak briefly of its objects, how managed, and make suggestions for the future. Our idea of an experimental garden is one in which different fruits, trees, plants, shrubs and vines are grown, and a complete record of the same is kept. For instance, if vines, when set, age and sort, growth from time to time, how trained, when pruned, winter protection, what and when given, condition of vine when put into winter quarters, and date of same, in what condition it wintered, and time of uncovering in the spring. This now, compared to or with some other sort, other things being equal, and we have gained some knowledge that ought to be of public good. I am sorry to say that under the present arrangement no such lessons of instruction are gained; and why? The entire planting and care of the grounds are left to the farm superintendent, under the general supervision of the President of the University, who, I rejoice to know, has a love and desire for the success of these grounds beyond your most sanguine expectations. The grounds have been reasonably well cared for. Donations have been limited, both in number of contributors and quantity. A. S. Fuller, C. H. Greenman and A. G. Tuttle were the principal ones who forwarded donations. Plants have grown reasonably well; but I am sorry to report that it is next to impossible to keep up a record as mentioned above with one set of men to do one part and another to do the rest. For instance, when are the strawberries, grapes and other plants to be uncovered? Your secretary goes out with paper and pencil; farm superintendent has no time or men to attend to it to-day; will be ready at such a time; then the secretary, perhaps, is miles away or busy in his other affairs. The remedy is simple and easy. The department of agriculture at the University is carrying on and conducting experiments all the time. Their time is fully occupied. What can be done? I will tell you. These grounds are nominally under the care and management of this society, although the regents have really paid the expenses, and what we need is that they allow this society to expend a certain amount of labor in the planting and care of these grounds, not necessarily more than it now costs them. By this means this society will be enabled to direct what shall be done, and place a laborer there who is competent to record the various items essential to making a history. This is the first thing to be gained. Without it we can see but little encouragement for continuing the care of the garden. After this there should be some

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definite plan for a continuance. The former system of soliciting donations, while it is well to a certain extent, is poor when continued as a dependence for the entire stock to plant. My own idea would be to decide on some one or more things that it is desirable to test. For instance, there are about one hundred and fifty varieties of the willow. What finer collection could there be than to have these arranged in rows or groups and their value fully tested for this climate? But how to get these? For this purpose we should appropriate a given sum for the purchase of plants, the Secretary never forgetting to use his soliciting power for the general good. By this means we may be enabled to focalize our efforts, expending them one year upon one thing—another year some other branch may be taken up. I mention the willow as it suggests a broad and very interesting field of labor. Others are just as much so. Even that much neglected bush the currant, numbers in the list about thirty named sorts; and yet how few in our state ever saw a half a dozen sorts. And so we may continue the list of subjects or items of special interest which should be taken up from year to year, as time and means are given us. Nor is this, gentlemen, like an idle tale, to be wafted away from us. There is great good in store from our labors. A plan can be matured which will prove tangible and result in great good. Shall we put our shoulders to the load, and with our joint action resolve that the sons of Pomona in the Badger State will lead the van in the successful organizing and carrying out an experimental garden? A state like ours needs just such a garden—a place where every known fruit, vine, and especially the small fruits, may be tested, not so much for profit—though in time it may grow to be a source of income—but particularly as a source of information to those who would be encouraged to plant orchards and ornamental trees if they knew what to plant. Another reason for requiring the continuance of this work is that we may have some place where all the old and new sorts may be congregated, worked in some manner so that they will fruit at the earliest possible moment, and by comparison of sorts very much can and would be done to correct the nomenclature of our present lists, and these lists, so corrected, should become the authority of the state. This garden in time should grow to an influence of no mean proportions. Imagine for a moment a thousand varieties of apples growing there, five hundred of pears, one hundred or more plums, and as many grapes and strawberries, not to mention other fruits, ornamental trees and plants. With a managing committee of say three of your best pomologists and botanists, whose duties should be to visit as often as might seem necessary the garden, comparing the various fruits and noticing its progress and condition. Will any one present say that such a work is not worthy your best efforts? Might it not become a labor of love of this society, and the pride of the state, to which other states may point with envious pride? Still another benefit, and one which to my mind is of incalculable benefit to the state, is the influence it would have upon the young men, students, who will see with honest pride the fruit resources of their state, and in their leisure learn to study its development, from thence the fruit sections or localities of their own homes, and when they leave their college life they will have learned what the books do not teach—practical horticulture; its effects will be known and read of all men in the renewed activity in tree planting.

Can our state officials do less than to grant a helping hand for the encouragement of one of the *most* useful of the industrial pursuits?

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The Secretary laid before the society a communication from P. A. CHADBOURNE, LL. D., and President of the University, in relation to the experimental grounds on the University farm, in which he expressed the willingness of the University to do any team work for this society, but could not, for want of means, perform the ordinary labor and care now demanded by the garden, and keep the required records. He thought the state should allow the society all the money needed to conduct the experiments in this ground, where the advantages of the University roads, fences, screens, etc., would allow every cent expended to tell to the greatest advantage in the experiments upon the plants themselves. Such experiments would furnish subjects for discussion at meetings of the society, and also the successful ones could be repeated and proved by the members, and thus the fruit capabilities of the state could be learned thoroughly in a short time.

The Secretary also read a communication from ISAAC J. HOILE, Corresponding Secretary of the Oshkosh Horticultural Society, inviting the society to hold its next meeting at Oshkosh, and promising facilities for the accommodation of the members and the society.

Judge KNAPP introduced to the society Messrs. SCOFIELD and MCAFEE of Freeport, Illinois, as representatives of the Northern Illinois Horticultural Society, who were in attendance, and moved their admittance as delegates to this meeting. The motion prevailed and they were admitted to seats.

Mr. SCOFIELD said he came specially charged to urge the joint action of this society with the Illinois society for the abolition of duty on imported seeds.

Mr. MCAFEE said he had brought with him a *lignarium* of the native woods of Stephenson county, embracing 49 genera and 168 varieties, which he would explain during the session. He also alluded to the position of Wisconsin, so far to the north, and yet it suffered less than regions farther south from changes of climate, though it required plants adapted to its condition.

THE TREASURER'S REPORT

Showed that he had a balance on hand of $326.31, and that there were no demands outstanding. The report was referred to the committee on Finance.

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COMMITTEES APPOINTED.

Committee to prepare and bring forward business, Messrs. KELLOGG, TUTTLE and GREENMAN.

To confer with the State Agricultural Society in relation to the annual exhibition, Messrs. HOILE, MASON and STICKNEY.

INDEPENDENT MEETINGS.

Considerable discussion arose upon the propriety of holding fairs independent of the State Agricultural Society, in which Messrs. LAWRENCE, KELLOGG, PLUMB, HOILE, WILLEY, STILLSON and DANIELLS took a part. This discussion manifested a growing desire for an independent organization, and action, as soon as it could be done, but resulted in referring a resolution that the committee of conference be instructed to ask for $700, to be distributed in premiums; and also that this society select one of the speakers for the annual fair.

The committee of conference subsequently reported that they had agreed with the agricultural society about the annual fair, and that that society had appropriated to this society $600 for premiums for the exhibition, to pay the usual incidental expenses, and give the horticultural society a voice in the selection of a speaker, if one was secured. The report was accepted and the State Agricultural Society so notified.

WEDNESDAY, 9 A. M.

President HOBBINS in the chair.

The report of the committee on Nomenclature being called in its order, its consideration was postponed for the present.

ENGLISH SPARROWS.

Dr. HOBBINS, from the committee appointed at the last meeting, reported that he had found it quite questionable whether the introduction of these birds would be beneficial or not. They were generally considered as a nuisance in England, where they were best known. However desirable they might be, they could not be procured at present, in this country.

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DIVISION OF THE STATE INTO DISTRICTS.

The question was discussed—"Shall the state be divided into districts?"

Mr. LAWRENCE could see objections to a division of the state; and at the same time, owing to climatic influences, he was aware that some sorts and varieties of fruits did better farther north than in the southern portion of the state, and a division might develop important facts in that direction.

Mr. MCAFEE said that the horticulturists of Illinois had at first divided the state into three districts. The state society overlooks the whole state, and these districts take care of themselves and the local matters. Now the state was divided by the geological character of the country into seven districts. The Rock river region, which embraced nearly all the northern part of the state, is on the Galena lime stone, and has essential differences from the region farther south. On this formation quinces will not grow, and pears on quince stocks also fail. Grapes require more protection, but are less liable to rot than in the other formations. He presumed that Wisconsin was similarly situated.

Mr. WILLEY thought the state could be divided into the lake shore, the prairie and the sand regions, with advantage, and different sorts recommended for each locality.

Mr. LAWRENCE had no doubt the soil had a great influence in many respects upon the trees that grew in it. Some required one kind of soil and some another.

Mr. STICKNEY had often noticed the difference between one kind of soil and another; but in the timber, whether sand or gravel, fruit grew better than in the open grounds. He was not certain as to the cause of the difference, but his apple trees were always firmer and freer from injury there than in the prairies. Some attribute this to the soil, and some to the greater protection that he received near the lake, and from the greater fall of snow.

Mr. TUTTLE was satisfied that some varieties grew and did better away from the influence of the lake than others. The Fameuse does not succeed near the lake nor in damp soil, but is well adapted to a dry, sandy soil. Some trees could be pruned to an open top, so as to be dry and airy; such did well; others required close tops. The character of the soil should be considered in pruning, so as to create or avoid dampness.

Mr. LAWRENCE—There is a marked difference between timber and prairie soil in the growth of trees.

Mr. TUTTLE—I have noticed that some varieties do well on rich prairies, and *vice versa*. The Bellfleur is worthless in rich prairie soil, so are the Wagner and others he could name. Some do well in almost all soils.

Judge KNAPP was glad to hear this discussion; it was a step in the right direction. He had long been of the opinion, that the question of *where* we should grow certain trees, was of as much importance as what should be grown. All know that certain kinds of trees grow in a certain kind of soil, and in particular climatic conditions. Any observing man could tell from the native vegetations, what was the

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character of the soil, and subsoil. Trees that grew and thrived in sand would die in the clay, and those of the clay would perish in the sand. For each there should be different lists. There was also a difference in the climate of different portions of the state. Trees that could thrive in one portion would perish from the severity of the winters of another portion. Fruits that found abundant heat in the south to perfect them would not mature in another portion, from a deficiency of heat. The dryness of one portion would destroy plants what would thrive in the dampness of other parts. All these required different recommendations; some of which could be brought out only by the local organizations, and by observations upon temperature, currents of winds, rainfall and evaporation, which should be taken in every county of the state.

Several others spoke on this subject, but no action was taken.

LOCAL SOCIETIES.

The call being made for reports from the local societies—

Mr. HOILE spoke enthusiastically for the Oshkosh society, and the marked influence it was having upon the citizens of that county. It had started under adverse circumstances, and a few persons had been obliged to carry on the work almost unaided. If some of the officers of this society could be induced to come among them, and address them, it would have a good effect. As it was, he was authorized to extend a challenge to any society in the state, for a competition at a June exhibition, in fruits and flowers.

Mr. LEITCH replied for Madison, that he would accept the challenge thus given. For his own society he could say that it was one of the institutions of the city; and to it, and its influence, was due the ornamentation of the city, as well as most of its fruit.

Mr. LAWRENCE, for Janesville, said that their society had somewhat fallen off from its former standing; but by holding a series of weekly meetings of late, a new interest had been awakened, and matters appeared better. He thought Janesville would not allow Oshkosh to have the exhibition all to itself.

Mr. GREENMAN, for the Milton society, reported that it was but recently organized, but it is progressing very satisfactorily. They had held an exhibition, and have frequent meetings for discussions.

Mr. PLUMB, for the same society, said that Milton owes to the state society a debt of gratitude for the encouragement it had received in its organization, and for the many and great results that they had already felt for their place. The best men in the place had become enlisted in the subject, and were giving them a helping hand. The faculty of the Milton College were taking hold of the matter, and are adding strength to our encouraging work of holding monthly meetings. He hoped that an exhibition would be held in June, and that Milton would be named as the location.

SUMMER EXHIBITION.

Mr. STICKNEY offered the following resolution, which was adopted:

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Resolved, That this society hold a summer exhibition, offering premiums to individuals, and also liberal premiums to local societies; and that we appropriate one hundred dollars of our present funds for this purpose. The location of the exhibition and time to be decided by the excutive committee.

[This meeting was held at Oshkosh in June, 1870, but owing to the dry, hot weather in the southern counties, few from those counties attended. The show, however, was a success qualitatively and pecuniarily.—*Secretary's Report for* 1871.]

HORTICULTURAL LIBRARIES.

Mr. McAfee inquired whether any of the local societies had established libraries, as one of the means of usefulness in their work?

Mr. Leitch replied for the Madison society, that it had begun a library, and was making additions to it constantly.

Mr. Hoile said it had been resolved by the Oshkosh society to commence a library for the use of the members. They were acting on the principle that the dissemination of knowledge was the best means of promoting horticulture. Pains were taken to have many horticultural papers and periodicals relating to and giving knowledge upon this subject laid before the people; and they were already feeling the good results of their endeavors; and among the best of these was the *Western Farmer*.

Mr. Morrow, of the *Western Farmer*, said that in view of the great importance of horticultural knowledge to the community, he would announce that his paper should be always open to the proceedings of all the local as well as state societies and others who desired to use its columns, and he should endeavor to make it worthy of a place in the library of every society.

HONORARY MEMBERS.

Mr. Stickney then introduced Mr. Emory of the *Prairie Farmer*, and Mr. Andrews of Marango, of "Siberian crab" notoriety, and moved that they be admitted as honorary members. Which motion prevailed.

THE EXHIBITION OF FRUITS.

There being on the table a large show of apples, pears and grapes, exhibited by the members in attendance, on motion the President appointed Messrs. Plumb, Stevens and Stickney a committee to examine and report on these fruits.

EXPERIMENTAL GARDEN.

At the afternoon session the question occurred in its order, "What course shall be pursued with the experimental garden?"

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Judge KNAPP. There is no way to dispose of this subject but to obtain an appropriation from the legislature to carry it on, and he therefore moved to refer the matter to the committee to memorialize the legislature.

Mr. PLUMB approved of the object of the garden, which was as yet but an experiment. The horticulturists have done much that will be valuable to the state and the university, if not to this society. Scattered as its members were, its management presented many difficulties. He was therefore in favor of passing it over to the care of the regents and the professor of agriculture in the university.

The Secretary, on request of members, stated that there were about 1,500 plants and trees donated in 1868, and that in all there were about 2,000 of all varieties, now growing on the grounds, and in good condition. He did not approve of the suggestion to hand this enterprise over to the university. That institution could not carry on the desired improvements, because the department of agriculture was now fully occupied with its systen of experiments.

Professor DANIELLS, of the University, suggested many reasons why the society should continue the care of the garden. Among others was the fact that the University cannot, for want of means, carry on this work. As professor at the head of the department of agriculture, he had no time to do more than he was now charged with, and could not think of carrying on this work.

Mr. MORROW said no one who had the opportunity of witnessing the work done by Professor DANIELLS would doubt the impossibility of his taking charge of the garden. He rather needed an assistant now, than that additional labor be cast upon his department.

On motion of Mr. KELLOGG, the subject was then referred to the President, Recording and Corresponding Secretary, as a committee to memorialize the legislature for an appropriation to be expended in experiments on the experimental garden of the society.

ABOLITION OF DUTY ON IMPORTATION OF SEEDS.

Mr. L. K. SCOFIELD of Freeport, introduced the following preamble and resolution:

WHEREAS, In view of the fact that our native forests are rapidly disappearing, to supply the increasing demands of commerce, and that by careful calculation, it is estimated that before the present generation shall have passed away, our present source of supply, derived from the pine forests of Wisconsin and Michigan, will have been almost entirely exhausted, it becomes a matter of great national importance to encourage the planting of forest trees, especially in our northwestern states and territories; therefore,

Resolved, That we deem it the duty of our national and state legislatures to encourage, by every means in their power, the *general planting* of forest trees in our country, and that the members of congress from this state be requested to take such action, either by themselves or in conjunction with congressmen from Illinois,

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who have been instructed by the horticultural societies in that state, to use their influence with the committee of ways and means to have the importation of trees and plants again placed on the free list, as prior to 1860.

Resolved, That our Corresponding Secretary is hereby requested to forward to each member from Wisconsin of our national legislature at Washington, a copy of these resolutions immediately after the adjournment of this meeting.

In support of these resolutions,

Mr. SCOFIELD gave much valuable information on the present tariff on foreign seeds, and urged the necessity of removing that tariff, that such seeds might be readily obtained for supplying the prairie country, now destitute, with trees. That, instead of discouraging the propagation and growth of these trees, every effort ought rather to be used to encourage that growth, and the planting of trees that are to supply the demands of commerce. He was willing to concede the value of our native pines, as very rapid growers and valuable trees, when planted out and cared for as they should be; but he contended that the European larch was even more valuable, and made more growth in its early years, and was a more durable wood. It was perfectly hardy, and well adapted to the climate and soil of this region. Speaking from his own experience in growing this larch, he had trees, four years after setting, that were valuable for posts and stakes for grape vines, and in ten years they would make from two to four fence posts. He gave instances of their durability when set in the ground, showing it as durable as any other timber. The American is not as valuable, because it requires a low, wet soil, while the European grows on high, dry lands.

The resolutions were adopted.

PRODUCTION OF NEW VARIETIES.

Mr. G. E. MORROW read the following paper on this subject:

In the year 1845 "Downing's Fruits and Fruit Trees of America" was published. It contained descriptions of 1,005 varieties of fruits. In 1869 a third edition of the work was published, containing descriptions of 4,552 varieties of fruits of 25 kinds. In the first edition 109 varieties of apples were described; in the last 1,885; then 54 varieties of grapes were named; now 233; then 33 varieties of strawberries; now 257. These figures show a remarkable increase in the number of varieties, within a little less than 25 years. Add to them the multitude of unnamed varieties of local repute, and the uncounted number of new seedlings to be found in most parts of the country, and it might seem there was no need for the production of new varieties. But, even in the most favored sections of our country, comparatively few of this great number of varieties succeed well, and here in the northwest it is especially needful that we have a greater number of varieties adapted to our peculiar conditions of climate and soil. How many varieties of apples, pears, plums, grapes, strawberries, etc., can this society name as in all respects worthy of cultivation in this state? None know better than some who hear this, how much we need a larger number of hardy, productive

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varieties of fruits of almost every kind. He who produces a really desirable new variety of fruit, or vegetable, and introduces it to the public, does a good work, and, if he be wise in the matter, may make it a source of pecuniary profit.

The three obvious methods for producing new varieties, either of fruits or vegetables, are: Selection of wild, native varieties; raising seedlings, and by hybridization. Of some kinds we have no native varities; with others, the seeds produce the same variety unless hybridization has been caused; and with still others, hybridizing is practically almost impossible. Each of the three methods named may be pursued with many kinds of fruits.

With all the incentives to labor in this direction; with the remarkable success that has sometimes crowned such labors, it is yet true that most which has been done, has been the result of chance, so far as the design of the producer was concerned. Comparatively few men have made experiments in this direction a special work, in which science has been carefully applied. A few have done this, and their names are held in deserved honor. And yet there is not a little to discourage. The late Mr. GOODRICH is said to have produced over 16,000 varieties of potatoes; of these, not sixteen are now generally known, and not six take high rank. Of the many thousand varieties of strawberries fruited in the last few years, comparatively few have marked excellence. The time will come, we hope, when experiments in this direction will be less blind groping; when we will be able to produce a variety of fruit with given characteristics as readily as we now modify the characteristics of our domestic animals. For the present we must expect many failures and disappointments, and must be willing to try long and patiently to secure the desired end, although success may, and sometimes does meet us almost at the very first.

In all our experiments we should remember that the production of fruit of superior excellence and in great abundance is not natural to plants. We all know that the production of wood and of fruits is in some sense antagonistic. When we think of the origin of most of our fruits, of the wonderful changes that have been wrought in them by the art of the gardener, we see how artificial and unnatural is the condition of nearly every improved fruit or vegetable. The best specimen of a tree, as a tree, does not ordinarily produce the best fruit. Hence, in the selection of wild varieties, or in the choice of seedlings, luxuriance and rapidity of growth, even general thriftiness of appearance, is not to be taken as a chief recommendation. Such characteristics may even be evils, rather than recommendations. We must have sufficient vigor to enable the plant to resist the unfavorable circumstances in which it may be placed, and rapidity and luxuriance of growth are desirable so far as they can be received without loss of hardiness or injury to the fruit-producing qualities. But mere vigor of growth is not in itself a conclusive recommendation of a seedling, nor is slow and comparatively feeble growth a sufficient reason for rejection. Suppose the first Delaware had been rejected on account of its slow and feeble growth. Another point connected with this, and which we should bear in mind, is that we cannot expect perfection in any fruit. High excellence in one quality is generally accompanied by a corresponding failure in some other desirable quality. This is no reason why we should not seek the highest attainable excellence, but bearing it in mind may teach us to avoid some disappointments.

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Here in the northwest, where it is still denied by some that fruit can successfully be grown, the first points we should seek are hardiness and productiveness. We want trees and vines that will live and produce fruit, and these qualities secured, we look for excellence of quality as a highly important, but still secondary consideration. Hence it is particularly desirable here to choose any native fruits which give promise of capability of speedy development, as these give us undoubted hardiness with which to start. Our native crabs are probably too far down in the scale to make it advisable to attempt their improvement; but among the wild plums of Wisconsin there are doubtless some of much value, every way worthy of cultivation for their own merit, and furnishing admirable material for experiments with seedlings or in hybridizing. So too of native blackberries, raspberries, cranberries. Those who have observed the difference in the habit of growth, and in the size, flavor and time of ripening of the fruit, of canes and vines found growing wild, and have noticed the excellence of some of them, will need no reminder that there are doubtless varieties, now neglected in Wisconsin, which, if improved by cultivation, would equal in all respects, and surpass in hardiness, any of the now imported kinds. The most common method of producing new varieties, and the one by which most thus far has been accomplished, is by raising seedlings. The time may come, when we will be able to predict with some certainty, the kind of tree and the kind of fruit, to expect from a given seed, the history of which is known; but now we know little about this. We know, however, enough to teach us that the hardiness of the parent tree should be considered, and this is a point of practical importance with us. The seeds of the most hardy kinds should be sown, and it is reasonable to believe that the seeds produced by the seedlings from hardy seeds, will be still more desirable. Hybridizing is usually attended, in the case of tree-fruits particularly, with much practical difficulty. Most has been done with this process in the case of the grape. To the scientific horticulturist, and to the enthusiastic amateur, this plan is the most interesting, perhaps, of any method of producing improvement in our varieties. From it we may hope much in the future. In the work of encouraging the production of new varieties, and in commending all successes in this field, it is the duty and privilege of this society, and of all lovers of horticulture, to engage. Who can estimate the value of the Concord grape, and Wilson's Albany strawberry, or tell the influence in popularizing horticulture caused by the introduction of these two varieties? And yet it is but a few years since we had neither of them. So we may expect to have equally marked improvements in the near future. But with the good done in this way there is connected an inseparable evil. With the few really valuable varieties produced we have many that are either worthless or at best mediocre. Many of the latter, and not a few of the former, are introduced to the public with such pretenses as to induce large purchases, and consequent disappointment. There are those who make it their principal business to introduce novelties, and who are not always careful to strictly regard truth in their recommendations. But it often is not necessary to suppose intentional deception on the part of the introducer of what proves to be only a poor fruit. It is natural that one who has reared a seedling, or spent years, perhaps, in developing a wild variety, should regard the fruit with partial eye and taste, and that he should seek to introduce it to the public as

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soon as practicable. If he states only the truth about it, no moral or legal guilt attaches; but the world can afford to wait, and in all ordinary cases it is safer and better to have the new favorite thoroughly tested, so far as practicable, in different soils and climates, before giving it to the public, and then to have it formally introduced by a respectable and competent horticultural society. In this work of testing new varieties the state horticultural experimental gardens can do very much good, and in this way alone be worth many times its cost. The duty of horticultural societies in this matter is plain. In no case should they, from considerations of friendship or encouragement for the introducer, recommend a variety without strong evidence of its positive value. If a new variety, named and introduced by a horticultural society, be not in some respect better than well known varieties, harm has been done by its introduction. And in no case should a variety be recommended on the merit of the fruit alone; the hardiness, productiveness and habits of growth of the tree or vine should also be considered.

To nurserymen, experimenting in the production of new and improved varieties, it is a natural and appropriate work. Considerations of self interest, and of regard for the improvement of horticulture, alike prompt them to seek to originate such varieties and to test those introduced by others. And it is equally true, although not always remembered, that both these considerations should prevent their encouraging the sale of, or recommending any variety which they have not good reason to believe will succeed. A strict regard to this principle by all our nurserymen would do much to inspire confidence in them, and to increase the demand for their stock, as well as be a successful preventive of many of the evils now charged to tree and plant peddlers. The growth of new and untried varieties is not to be discouraged, nor yet their sale in limited quantities and without false pretense, but the practice of "pushing" into sale untried varieties is strongly to be condemned. The purchaser should exercise good sense in this matter. If he insists on buying in large quantities untried sorts, however promising, let him not complain if they fail. On the other hand, it is wise and commendable to test new varieties. Nor should objection be made to paying an extra price. The originator of a valuable fruit or vegetable is as much entitled to a reward as is the inventor of a valuable machine. It is claimed that a tomato, the seed of which is now offered to the public at a high price, is the result of experiments and careful culture, continued through twenty-three years. If this be true, it is right that a fair reward should be paid to the one who did the work. It should be remembered that trees, and especially vines, are rapidly propagated, and that if the one to whom we owe the introduction of a valuable new variety is to receive a reward, he must secure it in a short time. So, while we guard against the folly of indulging largely in novelties at extravagant rates, let us not decline to buy a tree or two, or a half dozen vines of a promising new variety because the price is high. At least let us avoid the character of that great pest who habitually decries the merits of all new sorts, and refuses to buy them, but who is always willing to beg, or perhaps even "appropriate" a few cions, seeds or roots, and to eat the first specimens of fruit secured by his more enterprising neighbor.

Adjourned to 7½ P. M.

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Evening Meeting.

Called to order. President in the chair.

Mr. C. ANDREWS of Marengo, Ill., read a paper on

THE SIBERIAN SPECIES OF THE APPLE.

The Siberian species of the apple is now attracting much attention, and you will agree with me that, while we cannot be too careful in rejecting humbugs in horticulture, we should be equally careful not to commit the still greater error of condemning even a single fruit of universal or large local value, for want of a fair and impartial investigation and trial of its merits.

In the subject before us we have, not a single variety, but a whole species, claiming attention and discussion. The dissemination of a new species of the apple, valuable everywhere, and capable of introduction into large sections hitherto wholly unsupplied, involves interests of national importance and should be treated in no narrow and sectional spirit. In order to show their relative position and importance, I shall briefly review the origin and characteristics of the other allied species of the apple, and refer to their comparative uses and adaptation to our varied climate, particularly with a view to solve the important question of the coming hardy apple for the north. The origin and botanical classification of the different species and subspecies of the apple, are subjects yet involved in much obscurity, even among botanists. The classification, LOUDON attempts to give, appears more consistent with the observations of orchardists than any other. It is as follows:

1. *Pyrus Malus.*—Wild parent of the common apple—an assumed species apparently, as the true parent of the domestic apple does not appear to be now in existence.
2. *Pyrus Malus acerba.*—Sour-fruited apple tree, or wild crab of Europe.
3. *Pyrus Malus Prunifolia.*—Wild Siberian Crab.
4. *Pyrus Malus baccata.*—Berry-like fruited crab, a native of Siberia.
5. *Pyrus Malus Astracanica.*—Astrachan apple, a native of about Astrachan.
6. *Pyrus Coronaria.*—Common American Crab.
7. *Pyrus Angustifolia.*—Narrow leaved American Crab.
8. *Pyrus Spectabilis.*—Chinese Flowering Crab; and several other varieties, making in all thirteen species and sub-species.

Other authorities create various sub-species and classify them differently, but all agree on one point, that while all these species reproduce themselves from seed, some perfectly, and all with more or less variation, no one "ever reverts to, or produces any of the others." This fact seems to controvert the common opinion that our domestic apples are derived from the wild crab of Europe, a belief which appears to be unsupported by facts. The botanist RAY claims that the specific character of the English Crab and our cultivated apple, are more different than those of others, admitted by all, to be distinct. "Upon the whole," says a recent writer, Mr. W. C. FLAGG, "it seems highly probable that the cultivated apple, which will not revert to the common crab, from seed, and which is first historically known in

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Southern Europe, is the offspring of some of the wild Asiatic sorts. If we may judge the *Pyrus Malus Prunifolia* or wild Siberian Crab by our cultivated fruits of the same name, it must be a species far more susceptible of improvement by culture, than the European species."

The foregoing classification seems to throw some light upon the peculiarities of different classes of apples now cultivated in this country.

First. The common domestic apple, of which the Bough, the Baldwin, the Greening and Russett are examples—affords varieties noted for their number, size and excellence. This family, the oldest and most thoroughly disseminated, is the only one yet fully tested as to its capacity for improvement and the extent of latitude in which it will flourish. Although it may never be possible to point out the ancestral stock from which this grand group of varieties has sprung, yet it is curious to observe, that almost by common consent, its origin is referred to Western Asia, a portion of the globe which, while it is believed to be the common cradle of mankind, is also the birth-place of nearly every species of our roseaceous fruits. The almond, apricot, peach, pear, cherry, plum, quince and apple, are all referred to the countries bordering on the Caucasus and the Levant. And it is not less curious and convincing to observe, that to this day the common apple, especially that particular group just referred to, is in its constitutional habit and adaptation, nearly confined to those portions of the temperate zones which correspond to the regions of its supposed origin. And from all the experiments and attempts at acclimatizing, which have been made during centuries of cultivation and diffusion, it is not probable that any perceptible variation of constitutional vigor or hardiness has been attained or ever will be by the progeny of this species proper. It is a law in botany that each species of plants has its climatic limits. The open culture of the common apple, by no system of seedling production can ever be carried beyond the climate peculiar to the native *habitat* of the species. For varieties that will endure the rigors of heat and cold, in our very capricious and trying climate, we must look to some other species having a more vigorous constitution and a wider adaptation of habit.

Since penning the above lines I have accidentally cast my eyes upon the following from an address of President WILDER of Massachusetts:

"A good constitution for a tree is as essential as a good constitution for a man. Acclimation of a tender tree or plant is impossible. He who embraces this fallacy is like one building his house upon the sand. * * The million cannot be educated to extraordinary care; therefore, a primary object in the selection of a fruit tree should be entire hardiness for the locality in which it is to be planted. Such a subject, though not itself producing the best of fruit, will furnish the foundation upon which we may graft finer sorts and render them more durable." Or, it might be added, from which we may reproduce from seeds, by culture, still higher qualities of these hardy fruits, and thus render them both permanent and valuable.

Second. This brings us to the consideration of another class or species of apples, essentially different in hardiness, growth, foliage and fruit. They are commonly known as Russian apples. The Duchess of Oldenburgh, Alexander, and Red and White Astrachan, are examples. LOUDON refers these apples to a separate species called the *Pyrus Malus Astracanica*. The facts warrant the opinion that they

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have a distinct origin; no doubt in a more northern latitude, than that of the first named group. Their quality is second; but their superior hardiness enables them to meet the wants of a much wider belt of territory toward the north, than the tenderer sorts of more southern origin. They are all summer apples—a strong inference in favor of their high northern origin, as fruits ripening in those short summers must necessarily mature early. The practical fact to be noticed here is the mistake of those who are seeking to produce from seeds of Russian apples a hardy winter fruit for the north. It will not be done by bringing cions from northern Europe, or planting seeds in the extreme north. But a long course of reproduction, in a climate where the seasons are longer, will be required to change these fruits from summer to winter ripening sorts. At the same time, such cultivation in a southern latitude will not alter the constitution of the trees, so as to render them any the less hardy, when returned to a northern climate. Another practical point is—the futility of the hope of producing hardy or "acclimated" trees in the north, by planting seeds of the tenderer sorts there. The law that seeds produce plants after their kind, will prevent any such result.

Third. Another species of summer fruits, also of high northern origin, are cultivated in this country—the *Pyrus Malus Baccata* of Loudon. This fruit is mentioned in American Pomology as having been seen by Pallas near lake Baikal, as a shrub three or four feet high, bearing berries the size of peas. The calyx in this species falls off, leaving the fruit smooth: hence its name baccata, berry-like. It is called in our gardens cherry crab, currant, and sometimes pea crab. The fruit is highly prized by all good housewives for preserving, and by planters in town and country the tree is esteemed as highly ornamental for garden or lawn. The marked advance in this species from the diminutive shrub found in Asia, warrants the belief that it will continue to sport into still higher forms. It is instructive just here to observe that while all of the Siberian species are rapidly improving, we hear of no new sports from the European crab, and actually know of none from the wild crab of our own country.

Fourth. Still another species of the Siberian crab apple, according to Loudon's classification, remains to which to pay our respects. The varieties originating from the *Pyrus Malus Prunifolia* or Plum-leaved Siberian Crab, are of comparatively recent production, its two most common representatives, the large red and yellow Siberian crabs having been mentioned by writers on pomology so late as 1857 as being "by no means common." These sorts, however, have been very rapidly disseminated, and had at one time quite a run, as fancy preserving fruits, in the markets of the large cities. Their great beauty and novelty no doubt contributed to this result. Their faults are, small size, astringency, and early decay. But with all their faults, they possess sufficient merits to maintain a constant place in the markets, for trees and fruit, and they are planted in almost every garden, and used in every family for various culinary purposes. A word as to the limit of diffusion of this species. The common Siberians are grown in all the middle and eastern states. They thrive also in the southern states even as far south as the vicinity of Mobile, Alabama. From Arkansas, Texas, Mississippi, North Carolina and Tennessee, information received shows that they are known and appreciated wherever

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planted. In California they have shown surprising results in size and early productiveness. Dr. Warder saw Siberian crab apples growing and bearing abundantly on the peninsula of Kewaunee, Michigan, and remarks, "there is no doubt of their hardiness anywhere within the limits of the United States." They have produced fruit at the head of Lake Superior, while the hardiest of the Russian apples are still regarded as doubtful at St. Paul. Statistics would doubtless show that the value of the Siberian apple trees planted in the northern portions of Iowa, Wisconsin and Minnesota far exceeds the value of all others which survive, although their cost is inconsiderable when compared with the large sums that have been thrown away upon tender varieties. But the northwest is not alone in appreciating the rising importance of the Siberian family. Such have been the changes of the climate during the two last decades, that in New England and the British Provinces, the improved Siberian apples are sought after with even more avidity than in the northwest. There is a reason for it. The experience of that region is older and less confused with the ideas and experiments of a recent and unacclimated population. They know what will *not* succeed. They have lost faith in the theory of acclimating "native seedlings" of the *Pyrus Malus*. Successive reproduction from seed is no doubt the true way to produce ameliorated fruits, but this process can never render a tree or plant hardier than the original, which was fashioned and designed, so to speak, by the hand of nature, to meet the vicissitudes of peculiar climates and portions of the globe. This principle is equally true, whether we accept the theory of independent acts of creation for each one of these now distinct species, or whether with Darwin, we believe them to have become distinct by the effects of actual diffusion and climatic causes during the lapse of incomprehensible periods of time. Under the latter theory our statement that successive reproduction in a rigorous climate could *never* render a plant hardier, is not theoretically true, but practically it is the same. For the period when these different species may be supposed to have acquired their peculiarity is, according to the Darwinian theory, so infinitely remote, that our assertion as to the design or effect of nature in fashioning them, loses none of its force, whichever theory of original creation we may adopt.

We have thus seen that in the Siberian species of the apple we have a congeries of fruits far more universally adapted to the great diversity of climate and conditions in our country and on the globe, than in any other species of the ligneous orders of fruits. And it only remains to show what are the comparative qualities and tendencies to improvement of this species of the apple, in order to assign to it its proper place in the catalogue of fruits for general trial and cultivation. All varieties of the Siberian crab apple, which are now numbered by the hundreds, are doubtless, as Mr. F. R. Elliott says, "mere chance seedlings, ameliorated fruit, by culture and climate." Among these ameliorated varieties the Transcendent and the Hislop apples have become more widely known than any, except the red and yellow. They have no authentic history. Even the section of their origin is not certainly known. But in less than twenty years they have acquired a popularity which has rendered them the most popular nursery tree in the northwest. The main facts regarding the value of these two sorts may be briefly stated thus: The trees, like all of their species, are perfectly hardy as far north as they have

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been planted, and in every other section are strong growing and productive; the fruit is medium in size, very handsome, and in use from August to November; in quality, too austere for the choice dessert, but once established in the kitchen, they are never discarded for any other sorts whatever. A fair test of value is the price a fruit will bring in market when in competition with others. The Transcendent has sold in St. Paul for $1.25 per peck, when large apples, shipped from Illinois or Michigan orchards, brought only $1 per peck from the same store. The same apple has for the last four years brought in the markets of Chicago an average of $1.50 per basket, or $4.50 per bushel, when the best eastern apples were in good supply at $5 to $6 per barrel. Similar testimony can be gathered wherever these apples are grown and brought to market. They are used not only for making jellies and conserves, but for pies, sauce and every purpose for which good cooking apples are used. The Siberians are unequalled for cider. Many new sorts have proved choice for the dessert, having a great variety of flavor, sweet, sour, sub-acid, tender and aromatic. Their extraordinary beauty will give them a high value in market as fancy fruits for the table, a place left vacant since the decadence of the Lady apple. While the improved Siberian apples are sought after as necessities in the northwest, in New England and in Canada, they are at the same time gaining steadily in popularity for private planting in all the best fruit-growing states east and west. The new varieties coming into notice will add greatly to the value of this species by increased size and quality, and also by extending the season of this fruit through the whole period of autumn and winter. Whenever a sufficient number of these improved sorts shall have become sufficiently disseminated to be fully known, they will no doubt establish a market value, not only in the north, but in every section where the apple is now grown, which will be as permanent as that of any other fruits. The fear expressed by some that the recommendation of these hardy and useful fruits will discourage the cultivation of larger apples in some places where they might be grown, when not put forth by interested parties, must be the offspring of either a prejudiced or puerile judgment. The Siberian apples are not *rivals* of any of the pomological treasures of the country, but *additions* to them. In the north they are indispensable; in other localities they come in as accessions to a rich and desirable variety, and fill a place for certain purposes for which no other fruits are their equals. The objection lies equally against the hardy plums, cherries and small fruits, and, in fact, is being urged in the same quarters, and for the same reasons, against all these classes of hardy fruits, which are likely to come in competition with fruits that can be grown only in certain favored districts. But such narrow and selfish views are unworthy of the broad and noble sentiments of good citizens, for viewed in the light of true patriotism, the cultivation and dissemination of a single new variety of a hardy and valuable fruit of any species, that is of universal or large local adaptation, is a matter of national importance. Take, for instance, that most neglected, acid and tiny of all our summer fruits, the currant, when considered in its relations to the health and comfort of the millions who yearly use it, to say nothing of its pecuniary value, and its annihilation would be a national calamity. So, too, the addition of a new and more valuable variety of that small but useful fruit would be pointed out as a praiseworthy aequisition.

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Who can estimate the commercial value of the Wilson strawberry and the other hardy small fruits to the nation; or of the May cherry and Miner plum to the west? And yet all these are still meeting the opposition of horticulturists who cannot see beyond the bounds of their own state or section.

It is safe to say that the new Siberian apples, brought to notice within the last few years, form a far richer and more important addition to the pomology of the country than any one or all of the above fruits combined. The extent of territory in which this species must ultimately be alone relied upon for a supply of home-grown fruit, is immense in area. The social consequences of such a supply are not to be computed in dollars and cents. No true pomologist will for a moment calculate the problem of keeping open this vast region as "the natural market for the finer fruits grown further south," by discouraging the introduction of "Siberian crab apples and other coarse fruits" into that section. With our wide domain and varied climate, subject to changes which sometimes destroy our most luscious and long tried fruits, we cannot afford to dispense with a single variety, much less whole species, which promise a permanent supply of hardier and perhaps ultimately equally valuable fruits. The Siberian species of the apple offers to us, as horticulturists, a rare opportunity to test the capacities of our soil, climate, Yankee genius and generous hearts, in multiplying and extending to every portion of our country the rich pomonal gifts that nature has placed in our hands to cultivate and improve.

At the close of the reading of this paper,

Mr. TUTTLE remarked that the crab could be hybridized with the Russian and other apples, and there might be good results therefrom.

Mr. STICKNEY thinks that we have about enough crabs; let them be only the six lower rounds of the ladder; but we should look for better fruits, such as the Duchess and others like it in hardiness. Others fully concurred in this caution.

This subject was extended to considerable length.

CRABS FOR STOCKS.

Mr. GOULD of Beaver Dam, offered the following, which led to much discussion:

"*Resolved*, That the adoption of the cultivated (Siberian) crab as a seedling stock, upon which to graft and bud our apples, is a step in the right direction."

Mr. PLUMB said that he had no doubt but the spirit of the resolution was all right; but he doubted if it would bear the test of experience and trial. If the intent be to propagate the crabs, then the resolution was proper; but if to work other trees on it, it was all wrong. Some apples, like the Bellfleur, would be a total failure, if attempted to be worked on the crab; the two would not unite perfectly.

Mr. GOULD—My experience has been with root-grafting on the seedling crabs, and in that I have been successful. He had suffered by root-killing, losing thousands of dollars. The tops were hardy, and appeared to come through the winter all right; but on being dug up, every root of the stock was dead, and he had lost

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his trees; but with the crabs for stocks he had lost no trees from root-killing. He had found no trouble in working varieties on the crab.

Mr. STICKNEY had worked a few hundred trees on the crab stocks, and found they did well, but they were dwarfs. Many of them had loaded down with fruit, and the fruit was smaller than usual. He knew no good reason why the crab was not a good stock for the purpose of dwarfing, as many varieties had improved on these stocks. He expected to get dwarfs and half standards on such; but for general use he doubted the propriety of their use. He found, however, the roots nearly double those on any other kinds he had used.

Mr. GOULD did not think the dwarf objection of any weight. We wanted dwarfs out west, if we could not have hardy trees without. Hardy stocks are absolutely necessary to hardy trees. Root-killing has been the great trouble with even the best sorts of trees. He had become so convinced of this necessity for hardy roots, that that he had entirely discarded all eastern and southern seeds. He found it better to pay forty dollars for a bushel of western crab seeds, than to get the others for five. In fact, they were worse than no stocks, as they were almost sure to die.

Mr. PLUMB said he would not say anything in favor of dwarfing, believing it a humbug generally, and proceeded to show that the cion will give its essential character to the root, no matter what the root may be, and that to the cion we must look for the requisite qualities of hardihood and vigor.

Mr. STICKNEY proposed the following, which was accepted by Mr. GOULD, and was passed:

Resolved, That we think favorably of the use of the Siberian crab stocks for the production of very hardy apple trees, by root-grafting or budding, and recommend that our nurserymen and amateurs experiment with them, and give us at some future meeting the results of their observations.

The remainder of the afternoon was spent in a revision and discussion of the list of apples as heretofore recommended, in which nearly all the fruit-growers took a part, and stated their experiences, which were very diverse on most of the sorts, but they adopted as follows:

LIST OF FRUITS.

Apples.—1st. A select list of five, of which hardiness is the first requisite, and to which there shall be no dissenting voice, viz: Duchess of Oldenburg, Astrachan, Fameuse, Tallman Sweet, Golden Russett.

2d. List worthy of general culture for all qualities of tree and fruit: Sops of Wine, Fall Stripe. St. Lawrence, Fall Orange, Plumb's Cider, Perry Russett, Willow Twig, Red Romanite, Blue Pearmain' Seek-no-further.

3d. List for trial: Sweet June, Tetofsky, Lowell, Bailey Sweet, Gros Pomier, (Haas), Paradise, Winter Sweet, (Sweet Wine), Cable Gillflower, (Flushing), Ben Davis, Northern Spy, Rawle's Janet.

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Strawberries.—The strawberry list was revised, and the society adopted the terms *market* and *family* to distinguish qualities, placing them in the order of their preference, viz: Wilson, Green's Prolific, Russell, for market; and Agriculturist, Russell, Burr's New Pine, for family use. Among the new varieties, the Nicanor was highly commended by Mr. McAfee. Upon the Green's Prolific Mr. Greenman remarked that he could grow as much fruit from one rod of them as from fifteen rods of the French.

Currants.—The currant list was left as last year; the loss of the foliage by the long continued wet weather causing the loss of much of the fruit. Mr. Plumb says the Versailles was the only variety that escaped on his grouuds. The long-bunched Holland was well spoken of by Mr. Stickney.

Grapes.—The grape list was left without change; the Delaware first and Concord as second, the unfavorable season of last year preventing any just comparison of varieties.

Raspberries.—The raspberry list of last year, viz: the the Doolittle first, was amended by adding the Miami, under its several names; also the Clarke, Purple-cane and Philadelphia.

Blackberries.—Mr. Stickney remarked upon the promising qualities of the Ancient Briton Blackberry, which with the Wilson's Early was recommended for trial. The Kititniny was acknowledged hardy and productive.

This list was adopted after a great deal of close canvassing of the merits of some of the sorts.

P. A. Chadbourne, LL. D., and President of the State University, who had been announced to deliver an address this evening, was called on:

He begged to be extused, on account of his health, which would not permit him to speak at length. He remarked that what he desired to say had been intended for other ears, and in commendation of the persistency with which the members of this society had pursued their work of enlightening the people of the state, on the subject of horticulture. For that they were worthy and should receive the aid of the state, by proper appropriations. He had designed also to speak upon the fact that many of the most useful varieties of apples were passing away, some not even out-living the generation of men that had produced them. This was in accordance with the laws of the universe. Nothing good and beautiful in the highest degree can be said to be permanent. Therefore, it was the duty of horticulturists to continually raise up new varieties to take the place of those now failing.

Mr. McAfee then read a paper on the subject of

OUR NATIVE WOODS, AND TIMBER CULTURE.

Old Egypt, the land of the Pharaohs, the Sphynx and the Pyramids, is teaching us of the New World true vital lessons, lessons of such paramount importance that the very being of generations of men hangs upon our appreciation of them. These lessons, the one of spoilation and its consequences, and the other its antitheses, the

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lesson of production and its results, are so full of interest to every thinker that they well deserve our most careful study. Upper Egypt, the formerly fertile country along the Nile, has been gradually denuded of its timber, and a decrease of the rain-fall has kept steady pace with the destruction of the timber, and the desert has steadily marched on, subduing the country to its wild domain, till the sands of the Lybian desert now drift into the Nile. This is the result of spoilation. On the other hand, in Lower Egypt, the last Viceroys have given much energy to extending the canal systems and planting trees; and also, the great engineer of the Suez Canal, M. de Lesseps, has made tree-planting a part of his policy, and the result has exceeded the largest expectations; rain-falls are increasing; indeed, rain falls now where it has not been known to fall before for hundreds of years, and the desert is being reclaimed, the arable area is extending, and gardens and fields exist where once was only the drifting sands. This is the lesson of production. Nor are these instances alone in their evidence as to the importance of tree-growths. In every case where history has recorded the fact of forest-denudation, or forest-production, the same meteorological phenomena have followed, namely: after the destruction of timber, aridity and sterility; after the new growth of timber, humidity and fertility. It is but fair then to conclude that if the rapid spoilation of the great northern forests and of our local groves goes on, we shall ere long hear the pertinent inquiry, "What shall we do for a climate?" As the production of trees and plants is, so far, the *only* means known by which man can, to any appreciable degree, influence the meteorology of a country in his favor, the question of timber production rises to the proportions of one of the grandest of our industries. But with all the importance which a philanthropist or general economist may give to the arboreal industries, in a money-getting country, and among a money-making people, there is an argument still more potent, in fact all powerful, the argument of pecuniary interest. This argument successfully applied to any subject will commend it to the public ear, endear it to the public heart. The fact that more money is involved in the tree question than in any other interest in our country, should clearly enlist the public sympathies in favor of arboriculture. And this it will do when once all doubt is removed, and the facts are made plain by experimental demonstration. Here is work for practical horticulturists all over the land, and here also is a work for the nation, the states and municipalities. While the actual facts as to the profitableness of tree-culture, are to be demonstrated by actual trial, the men who are making these practical demonstrations deserve, and should have the aid and encouragement of the nation, the state and the country.

The old philosophers had an axiom which all scientific progress has not disproved, that "Nature abhors a vacuum." The spot on earth vacuous of organic life is most truly abhorred of Nature; wherever such a spot exists, all the forces of Nature are perpetually at work to overcome this abnormal condition, and to produce the conditions favorable for organic existence. Where man in his ignorance has followed a system of husbandry which has depleted the earth of its stores of plant-food, until he is forced to abandon his worn-out fields, the lichen, the sedge, the hardy grass, the thistle, burdock and their myriad of despised coadjutors, succeeded by the bramble, the rose, the sassafras, the elder and other trees and shrubs set in, and in

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their succession of growth and decay, carry on their work of renovation and reconstruction till they have obliterated the sterility forced upon the soil by our wrong-doing, our robbery—not culture. This, if atmospherical conditions are favorable, is the cycle of organic life, often observed; and it proves, what? that the plant is the salvation or the redemption of the soil from the abhorred vacuum of sterility.

The grandest problem of any age remains for us to work out by tree-planting upon the so-called Great American Desert. This immense area, sloping from the great central axis of upheaval of our continent down almost to the center of the Mississippi valley, is from some cause strangely deficient in timber, and it is very dry and almost sterile in some parts. To just how great an extent artificial tree-planting will increase the humidity of the atmosphere, and consequently the productiveness of the soil, cannot be predicted, but that good effects in that direction will follow arboriculture, there is no reason for doubt. All the evidences which can be obtained go to show that the grass covered area is getting larger, and the cactus and artimesia area correspondingly smaller, since this region has been known by civilized people. The firebrand of the Indian and the wandering white man has been reducing the groves until at many places the only timber growth left is upon the large river islands, where the trees stand literally intrenched behind the flowing waters; but the few outliers which have for centuries withstood the flames on the highlands prove that wood growth is possible even on the high prairies at many points, and the suggestion which has come to many a mind, is that if our national legislature and our gigantic railroad corporations would but support proper organized effort, the most benificent results to our present and future population could be accomplished upon the "Great American Desert."

In support of the profitableness of tree production so many *facts*, established by actual trial, could be cited, that any man should be convinced that trees will pay on any bare farm. True, we are too young in forest-planting to have proved more than a few years' growth; but taking the results of these few years for data, and allowing for every contingency, making in all respects a conscientious estimate, the show of profits to the grove-maker are so large as to surprise even the calculator. Mr. Budd of Shellsburg, Iowa, who has grown the several species of ash to quite a large extent, estimates the net receipts from ten acres of red ash, of twelve years' growth, at $3,720. Mr. Schofield of Elgin, Ill., estimates the value of pine and European larch plantations as more than double these figures; and I have taken known trees for a guide, and after making every deduction for culture, interest on investments and taxes, I find that the net profit upon a ten acre grove of red maple, honey maple, red elm and white elm, at twelve years old, amounts to $1,152, or $9.60 per acre per year clear profit, above all expenses. (See Transactions of Illinois Horticultural Society for 1868, page 249.) An objection is raised that these are only estimates, not facts. So everything in the future is an estimate, an expectation, or even a wish; your next year's harvest and your next year's bread are but expectations, and they are reasonable or unreasonable expectations in just so far as they are based upon actual knowledge, and in just so far as they take into consideration all the probable causes likely to affect the production of the expected harvest. If all adverse probabilities have been duly considered, all favorable con

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ditions fairly reduced, our estimates are as deserving as are those of the careful husbandman.

He then gave a brief description of the different woods on his *lignarium* from Stephenson county, Illinois, beginning with the maples, of five varieties, all trees of great value. The red maple (*Acer Rubrum*) is useful as a lumber tree, and for fuel, and is with all the others a sugar producer. The silver leaf (*A. Dasycarpum*) is a rapid grower and worthy of extensive cultivation. The sugar maples, so-called, (*A. Saccharinum* and *A. Nigrum*) sugar, or hard maple and black maple, are worthy of cultivation, but of too slow growth to be generally popular. The ash leaf maple, sometimes called box elder, (*A. Negundo*) seems to be the most promising of all the maples as a subject worthy the planter's energy in this region—a rapid grower, healthy, a good fuel, and an abundant sugar producer, it pays doubly to plant, pays in sugar, and finally in fuel.

The balance of the trees were rapidly passed over giving the peculiar characteristics of each, and he closed as follows:

Pinus Strobus, the White Pine, whose body makes a part of every American home is, if there be any such thing, the tree of universal utility. Surely, I need not say for what White Pine is useful. For ornament, or for use, for show, or for profit, we have here a sufficient choice, and it but remains to *plant* and cultivate.

Judge KNAPP had listened with great pleasure to the paper just read, and to the list of trees and woods from Stephenson county; those named were not strangers to him; and he believed, that if in this state a few must be struck from the list, such as the blue ash, and the red bud, five could be added for one lost from that list. This list has not a plant of the *Vaccineæ* or whortleberry family, the blueberries and cranberries, and many others of the heaths. We were also equally rich in the cone bearing trees, with which the list could be swelled. He closed with offering the following, which was referred to the committee to memorialize the legislature:

WHEREAS, There has never been any collection of the botanical productions of this state, or collections of its animals, birds, fishes, reptiles or insects, belonging to the state, its university, colleges or organized societies; and

WHEREAS, There is an almost equal destitution of collections of the minerals and soils, belonging to the public; and

WHEREAS, Great need is felt in all portions of the state by our people, of more information in regard to the climatic influences that affect the vegetable productions of the state; therefore,

Resolved, That the State Horticultural Society request the legislature to pass an act that shall provide for such surveys, collections and observations as shall secure to our people proper museums of our vegetables and animals, and knowledge of our climatical influences.

Mr. PLUMB had noticed that the red maple, after a few years' use as a street tree, had failed, and he desired to know if it was to be considered a failure, as a shade tree.

Mr. MCAFEE had noticed a borer at work in the red maple, and suggested that the failure might be traced to that cause.

Mr. LAWRENCE knew of red maples that were perfectly hardy, and of others that had been killed by insects. The borer was found where the bark had been loosened in taking up or from other cause, and then the borers entered and did their damage.

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Dr. CHADBOURNE said the red maple was well adapted for damp soils, but would not succeed on high dry land. The borers are doing much damage, in some very large trees. They work under the bark, and no one knows of the danger the tree is in, until he sees it dying; and then if the tree is examined it will be found that these worms have girdled it. He called attention to the difference in the solidity and character of the timber grown in this state and the same variety at the east. The white oak here is not such tough wood as it is there. Here the black oak (*Quercus Coccinea*) is the best fuel oak. There it is considered almost valueless as fuel.

Judge KNAPP thought this difference could be traced to climatic differences, and especially to the greater heat and dryness of this region.

Mr. PLUMB gave his evidence to the rapid growth of the ash leaf maple. He knew of no tree that grew with the same vigor. On dry land it was perfectly hardy and would endure any amount of abuse.

Judge KNAPP said that this tree was one of the last found in crossing the great plains, where its capacity to endure the extreme drought of that dry region was proven. It was also found in the Rocky mountains, where it was also exposed to the most severe extremes. It is a native on the Mississippi; and at Prairie du Chien it had been planted by the sides of the streets, where its roots were stamped on and laid bare and bruised by cattle that lay under it, and yet it appeared uninjured.

Adjourned to 9 A. M.

THURSDAY, 9 A. M.

After some interesting and valuable conversation between Dr. CHADBORNE, Prof. DANIELLS and Mr. MCAFEE, on the subject of hybridization and production of new varieties and species, (for want of room the same is here omitted,)

Mr. STICKNEY read a paper on

SMALL FRUITS.

Mr. President and Gentlemen:

In this thoroughly discussed question of small fruits there is little that is new to offer, but there is much that is interesting, and much that will bear repeating. If through our published proceedings what I say may gain the attention of farmers and owners of village lots, and perhaps stimulate some to renewed efforts in fruit raising, I shall be well paid. With this hope in view, I will treat the subject in the most practical manner, placing before you facts rather than theories, and recommending only such practices and such varieties as will please all and disappoint none. From the man with his bearing orchard of one hundred or one thousand trees we will not claim or expect much attention. To him our small fruit talk will

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seem much the same as does the enthusiasm of poultry fanciers to the owner of a fine herd of Devons or Durhams. Neither do we hope to interest those who only notice fruit as it comes to the table, prepared for use; who value just as highly the quart of berries bought in the market as those gathered fresh from the garden. From the thoroughgoing "hog and hominy" eaters we expect no favors; and yet some converts, and now and then a good working disciple, come from that class. But to the laboring man, with only his cottage and rood of ground, which by his skill and industry he would improve and beautify; to the mechanic, who needs rest and recreation in the open air, and who perchance may also need all the substantial comforts and luxuries he can possibly derive from his garden; to the parent who would educate his children in habits of thoughtful and productive industry; to the professional man, who needs rest and relaxation from an overtaxed brain—to all these, and others, we bring words of good cheer. For all these, small fruit culture is just the thing, giving ready and abundant pay in beauty, utility, health and happiness.

What will the culture of small fruits do for us in dollars and cents? Let the person of limited means buy, at a cost of five dollars, or get as a gift from his neighbor, one thousand currant cuttings; plant in early spring, in good soil, and tend carefully through the season; in autumn, at least two-thirds will be well rooted plants, worth from two to four cents each. Here, at the end of six months, is your pay, at the rate of twenty-five cents per hour, for all labor bestowed. But do not realize now; better let your capital accumulate. Take these plants and re-set them in rows four feet apart and two feet in the rows. Still tend carefully, and they shall yield you wood for new supplies of plants, and after one year a paying crop of fruit. Do your duty by them five years and then balance accounts, and you shall again see your twenty-five cents an hour. Or buy one thousand plants of black-cap raspberries, costing ten dollars; plant in good soil, and tend carefully; in autumn layer the tops as they are ready, and in one year from the day of planting you may have three thousand good plants to sell, and in three months more, say five hundred quarts of choice fruit. Here again is your twenty-five cents an hour, and as much more in value of plants for future crops. Similar results may be reached with grapes or strawberries, though perhaps with less certainty. Do you lack the knowledge to do this? Observe and question carefully all within your reach who know aught of these things. Read all the books and agricultural papers at hand. Above all, watch carefully the effects of your own acts, and study to improve upon them, so that each succeeding year may find you better able to command success. In this way shall acquisitions of knowledge and power be of more value than the dollars and cents.

The man with some capital, who seeks an investment and a business, may safely and profitably invest in small fruits, if he can bring to his work a good stock of perseverance, energy and careful observation. Raspberries are readily made to pay a net yearly income of two hundred dollars per acre. Currants will do quite as much, and are more certain. Strawberries sometimes pay more than twice this, but owing to frequent failures are no more profitable than the others. But it is no careless, neglectful culture that secures these results. Yet it requires no more skill or management to succeed with these than with the best class of common farming.

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What can small fruits do for the villager or the professional man, who has but little ground, and seeks choice fruit for his table and amusement for his leisure? Where space is to be economized, strawberries must be grown in hills, grapes trained to the sides of fences or buildings; raspberries, blackberries and gooseberries, on trellis, or to stakes, and currants in tree form. All this involves much of thoughtful care and watching, much of skillful pruning and training; and with these come increasing interest in and love for the objects of our own care; great joy at our success, and disappointment at our failure. We draw upon our ingenuity for ways and means to accomplish more. We make almost daily new discoveries in the growth and development of our pets. Insect enemies are jealously watched, which gives us knowledge of entomology. All these combine to draw our minds from weightier matters, from the corroding thoughts of business life that tire and vex us; and thus we gain rest and renewed strength. Meanwhile our tastes are gratified and our bodily health improved, by cooling and delicious fruits from the early strawberry, in constant succession through the season; and by the aid of canning and other devices, aroun l the year. Even here, in our limited space, we may test and prove the merits of new varieties as offered, or by hybridizing and raising seedlings, we may originate something new and valuable and thus contribute our mite to the general good.

To the pioneer in new countries, small fruits are of great value, because so easily and cheaply transported, requiring so little ground, and yielding such early returns. Strawberries and raspberries, the second season, grapes, currants, gooseberries and blackberries the third season, and an abundance of all thereafter, and all from a few square rods.

To the nurseryman, small fruits, though requiring much attention, are a source of profit, because they require so little land and are so soon of marketable age. In many instances the cash realized from fruit and plants of these are the nurseryman's chief support while growing other fruit and shade trees to a selling size. With a good and reliable assortment of small fruits the nurseryman may do much to encourage and foster an increased interest in fruit-growing among his customers, because he can so readily show them samples of fine fruit, which he cannot so soon do with larger fruits; and because plants are so cheap that with a little persuasion almost every one will buy and plant them. Give a man a taste of fine strawberries or raspberries of his own growing, and he will soon come to think that he may as well grow an abundance of apples, pears and plums. The great point is to wake people up to an earnest beginning, and if this even cost the gift of plants to stock a small garden, it may be found a good investment.

Here let me notice an error that sometimes creeps into our practice. The introduction of new varieties has proved so profitable that many things of inferior quality have been, and probably will continue to be, introduced. They come with many and extravagant puffs, perhaps supported with certificates from eminent horticulturists. We buy them at high prices, exercise all our skill to multiply plants, and as soon as possible, pass along a supply to our customers, not exactly with our endorsement of their excellence, but with the high praise of the originator so attached as to carry the impression that we fully believe it. A few well-posted amateurs un-

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derstand all this, and buy with a full knowledge of the risk they run; but the majority do not look beyond us, they buy because *we* offer the plants and they have confidence in *us*. And when the proof comes with its bitter disappointment, they not only lose confidence in us, but are disgusted with the whole subject of fruit-growing, and will lose no opportunity to tell their failure to others.

Can we ignore the fact that in these matters we stand as teachers to the common planter, and that on our success, the good we can do our customers, and the aid we can give the cause we love, depends largely upon our sending out only the most useful things, and in such manner as shall make them successful in the hands of those who receive them? It is fitting and proper—nay, it is our *duty*—to test and prove all things new and promising, and he who does this, whether amateur or professional, is deserving of thanks. We only need caution about sending out with our endorsement things not well tested, or of inferior quality. He who produces a new fruit, which is a real improvement on those we have, is a public benefactor. In this there is much of interest, which may become to the nurseryman a sort of amusement and recreation. The past twenty years has done much to improve our small fruits, but still there is room, and we believe that great improvements are yet to be made. Is it not the duty of each and all of us to observe carefully and experiment as we have opportunity, and thus do something to pay for the benefits we receive?

A brief essay can say little about the general treatment of small fruits. Those who become really interested will avail themselves of hints and directions to be found in horticultural books and papers; this knowledge they will sift and test in their own practice, and through some successes and some failnres, will finally become very good cultivators. It is well to bear in mind that a deep and thorough preparation of soil is one great element of success, and that this is best and cheapest done at the very commencement, before any plants are set.

With the strawberries I have always been most successful in spring planting. Plant early, give clean culture, mulch in winter; take one, or at most two crops, and then turn under, planting a new bed each spring. This will give any one an abundance of cheap and delicious berries—the first fruit of summer, and a real luxury. Why don't *everybody* grow them? The varieties that have done most for me are Wilson, Green Prolific and Russell. There are doubtless many other good kinds, but these do not often disappoint.

Of raspberries, Franconia and Orange are productive and delicious, but they must have winter protection. Philadelphia does not need winter protection, yields large crops, and is of fair, medium quality. The black-caps, particularly Miami, will pay best, and give the best general satisfaction. They are excellent for canning, preserving or drying, thus giving us a supply of something good and palatable the year around.

Of the currants little need be said, except perhaps to present an earnest petition that they may be removed from weedy fence corners and given a fair chance according to their merits. White and Red Dutch, Cherry and White Grape, with Black Naples, will answer all our needs, except it may be for a late variety—for this, some are satisfied with Victoria. I would like something larger and better in quality, but

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have nothing to recommend. I have the past summer seen a variety under the name of Long Bunch Holland, (probably Long Bunch Red of Downing,) which appears to be the thing needed. It is of very strong upright growth; foliage very large and abundant; apparently two weeks later than Red Dutch; bunches very long (many of them six inches); quality and size of berry about the same as Red Dutch. If, on trial, these seeming good qualities are sustained, it will be a valuable addition to our list. It is not generally known how much is gained by planting currants in autumn. Their season of growth usually ends by middle of September. The leaves fall and the plants are dormant. If removed then they soon make a new root growth, which will push the next season's plant growth twice as far as when planting is delayed until spring. The same is true of cuttings. Plant your cuttings in early autumn; mulch heavily during winter, and the following season's growth will surprise and please you.

Gooseberries are rather too *sharp set* to be general favorites, especially as it is admitted that, owing to mildew we can do nothing with the larger varieties. True, they are not as useful or as much needed as currants, yet my garden would seem incomplete without them. For culinary purposes we find them useful, and when ripe, not bad to eat from the hand. Carefully trained to stake or trellis and well loaded with fruit they will attract much attention.

In blackberries, our ambition would be gratified, if we could equal some patches of wild fruit that are fresh in our memory, but at present this seems beyond our reach. We have yet nothing that we know to be entirely hardy and productive. I hope the Ancient Briton will meet our wants, but ask for another year of trial. Kittatinny seems to be growing in favor, and with slight winter protection will give paying crops of very good fruit. It seems to me that most cultivators err in their treatment of raspberries and blackberries; that they cultivate too much and too deeply, thereby injuring the small fibrous roots which lie near the surface and are the chief support of the plants. Would it not be better to prepare the ground deeply and well before planting, and after planting depend more upon light culture and *mulching*, thus leaving all roots uninjured, and securing a degree of coolness and moisture not otherwise attainable.

In grapes, Delaware and Concord always please us, and beyond these there is such a multitude of aspirants for favor, that I dare not particularize, but would say to all, be sure and plant enough of the two named, then test as many more as you can afford, and *hold fast all that are good.* The great wonder is that so many rest easy and satisfied, without a supply of grapes, when almost every farm, or set of buildings, affords some sheltered place where they might be grown. To the amateur, with some means, their culture under glass affords a pleasing enjoyment and luxury, worthy of consideration.

I will close by hoping that the time is near at hand when every land owner, and all dependant upon them, shall have an abundant supply of choice and healthful fruits always on their tables as an article of diet.

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Mr. PEFFER read the following paper on

PLUMS AND THEIR DISEASES.

Plums were a total failure the past year, on account of the atmospheric leaf blight caused by certain changes from heat to cold, and then wet weather for a number of weeks afterwards. This blight, with us, affected almost all vegetation, fruit trees as well as bushes, shrubs, forest trees, vines and grain. All early sown grain proved almost a total failure. The scab on the apple is also caused by the same blight; but some are affected on account of thinner skin and more tender varieties. Thus, very thick and glossy leaved trees. of the different varieties, were not so much affected, as for instance, almost all the Russian sorts of apples and their seedlings, pears of northern origin, early Richmond and Kentish cherries and their like, plums of thick leaf, stem, and fruit smooth, glossy surface—our wild varieties were not exempt, and are mostly dead; in short, all the plum trees, cherries, currants, vines, forest trees, etc., etc., that shed their leaves before the middle of August, are now dead; those that dropped their leaves before the middle of September are very sick, and unless a very favorable season ensues will die next summer. Thus we find that wherever this hot air current had a full sweep, everything has gone to destruction, but where there was a wind-brake or shelter, everything flourished, as can be proved by most of you here.

Leaf blight! By this I mean diseases of the leaf that are caused by atmospheric influences, such, for instance, as the falling of the honey dew and a hot air current afterwards, before a rain. If no rain falls after such, and the air is heated to such an extent so as to evaporate all the water in the honey dew drop, then blight does not occur. ' This dew drop is a hard, shiny substance, and the rays of the sun or heat will affect this spot so as to diccolor it and finally scorch it. Thus dried up, the surface of the leaf is ruptured, and when cold or wet weather sets in it generally causes a rot or fungi, and in a few days after crimps the leaf or causes small holes to fall in it, disturbing the free circulation of the sap, by which the leaf ripens prematurely, and falls before it has perfected its duty or functions, at any time during the growing season. This summer we had a streak of hot air pass from S. S. W. to N. N. E., on the 17th of June, I think. On that day the thermometer was at 84 degrees before sunrise, and almost a gale of wind, as stated before, from S. S. W. Towards the middle of the day the mercury ran up to over 110 degrees. All the new wood and leaves on plants were wilted; even cabbages lay flat on the ground; although the air seemed to be moist, yet all vegetation lay, wilting, scalding and hanging down where this wind had any chance to strike it. Towards night, however, it began to change, and the next day a cold north-east rain set in, and we had rain, more or less, every day for a month. All this time, the rot and fungi spread upon almost over everything, and in July many of the leaves commenced to drop, and of course the fruit was at a stand-still, and never got ripe. Some was half grown, and some nearly full size, but without flavor or taste, just in proportion as the leaf was affected, earlier or later in the season.

There is another variety of blight, which does not affect the plum trees, but the apple, pear, quince and crab-apple, called FIRE BLIGHT. This is a different disease, affect-

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ing the ends of the new shoots. Some horticulturists claim that it is caused by an insect, but my mind differs somewhat with theirs. I think it is caused by an electric air current, which suddenly congeals the sap in the new shoot, and in the ends of the new leaves, and in less than six hours afterwards the sap is converted into jelly. This jelly seems to be poisonous, for the leaf commences to wilt, *and in less than three days it will turn the leaf and bark of the shoot black*, and this poison will run down, more or less, towards the trunk of the tree, in the bark. The only way to save a pear tree from this disease, after it has commenced, is to cut the limbs back to where the sap is not affected in the bark of the tree, which is discolored and looks a little glossy or transparent. On the apple it will stop generally before it gets back or down very far, as the bark is more rough, hard and dryer than in the pear, and takes longer to rot the sappy filaments, on account of its acidity; and on this account a sweet apple tree is generally sooner affected than a sour one. There are sour apple trees that are affected on the end of the limbs, but are more inside of the tree than are those of an insect, that works in the pith of the new shoot, and generally leaves a little hole where they enter or leave the limb.

Mr. HOILE said that in Winnebago they had this year an excellent crop of cultivated plums, so abundant that they had shipped them abroad. But the wild plums had failed entirely, and they were paying no more attention to them. Those they had shipped to Chicago were reported larger and better than the average plums in that market.

Judge KNAPP desired to call attention to one fact that this remark of Mr. HOILE's called to his mind—why Winnebago was so good a fruit county. That county may be placed in the timber belt of the state, and is more protected from the cold winds than the prairies. Hence the trees are preserved during the winter, and it was another instance of the good effect of screens to protect trees. There was also in that county more rain-fall than on the prairies and openings, which aided the growth and productiveness of the trees. Cold spring winds blighted the flowers and new-set fruit. The best remedy for that was a protection of trees in the direction from which that wind came. There was another wind even worse—a hot one, that comes here from the arid plains, from the southwest—that dried and fairly burned up the trees, and their leaves and fruits, as had been described by Mr. PEFFER. The great enemy of the plum is the curculio, which can be destroyed only by catching. Naturalists had proved that the quail was one of the very best of our insect-destroyers, one that did no damage to the farmers. Laws were enacted to protect them for the sportsmen, but none to protect them for the benefit they will afford to the fruit-growers, in destroying the insects in the orchard and the garden. He would have this beautiful bird feel not only at home, but safe, in these places.

Mr. MCAFEE bore his testimony to the good qualities of the quail, as an insectiverous bird. But while up, and the subject of plums was before the society, he desired to call attention to the varieties of the "Chickasaws." This variety of the red or white plum, were excellent bearers, and many of them of excellent quality, and he had seen them kept for two years in a barrel or other vessel, with only water

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as a preservative. The fruit must be carefully picked and placed in the vessel, and water at the boiling point poured over them, when they must be covered over tightly, weighted down and kept in a cool place, where they will not freeze.

THE ENTOMOLOGIST.

Mr. KELLOGG said he and some of the others would like to hear something about the destructive insects, and he called on Professor DANIELLS to tell what he could of their habits, and the means of destroying them. The professor spoke on the habits of several insects, some injurious and some beneficial to the horticulturist; but his remarks were without notes, and he has not written them out.

Remarks were made on insects by Messrs. PLUMB, KNAPP, GOULD, MCAFEE and others, and the discussion was closed by Mr. LAWRENCE, who offered the following, which prevailed:

Resolved, That in accordance with the recommendation of President HOBBINS, W. W. DANIELLS, Professor of Agriculture in the State University, is hereby appointed Entomologist of the State Horticultural Society.

Afternoon Session.

At the afternoon session, the premium list was reported, amended and adopted.

ELECTION OF OFFICERS.

An election being held, the officers for the year 1870, were chosen as follows:

President—JOSEPH HOBBINS, M. D., F. G. S. and Cor. Mem. R. Hor. Soc., Eng.
Recording Secretary—O. S. WILLEY, Madison.
Corresponding Secretary—F. S. LAWRENCE, Janesville.
Treasurer—GEO. A. MASON, Madison.
Executive Committee—J. C. PLUMB, J. S. STICKNEY, GEO. P. PEFFER.

STANDING COMMITTEES.

Nomenclature—J. C. Plumb, A. G. Tuttle, Wm. Finlayson.
Seedlings—F. S. Lawrence, J. S. Stickney, J. Gould.
Finance—W. T. Leitch, J. Gripper, C. H. Greenman.
Observation—J. G. Knapp, G. P. Peffer, G. J. Kellogg, I. J. Hoile, C. Waters.

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Judge ORTON being present, was called out, and said:

Mr. President and Ladies and Gentlemen:

Called upon unexpectedly to speak on this occasion, I feel totally unable to say anything of any special interest to you. *Practically* I know but little, and *scientifically* much less, of horticulture. However, in common with others, I do know, that it is the highest department, and the perfection, of the art and science of agriculture. There is a higher and a nobler view of the tillage of the soil than its mere utilities, and to extort from the reluctant earth, already exhausted by greedy ignorance, a scanty subsistence, "by the sweat of the brow."

This pursuit has now assumed its proper grade, facilitated by the genius of invention, and illuminated by science, as the very foundation of all the departments of political economy, and as the most agreeable, healthful, profitable and honorable, among the avocations of man. It now has, beyond the mere *practical*, its spiritual or æsthetic and social bearings and influences upon society, in educating, purifying and refining.

Among our people, especially in the west, there is a general and a fond attachment, to agricultural pursuits, for the reason, probably, that nearly all of us, no matter what may be our present business or profession, came originally from the *farm*, and the pleasant memories and reminiscences of childhood and youth, amid the diversified labors, alternating seasons, healthful sports and innocent recreations of the farm, still linger about us, and nearly all of us intend, some time or other, to return and spend our last days, as we did our first, upon a farm. I think I can speak for my own profession, that most of us hope to become able, by hard work, in the responsible, wearing, and vexatious, and poorly paid labors of our profession, to buy a farm, and as the highest object of our ambition and most pleasing anticipation, return to its peaceful and happy retreat, for the remainder of life.

Those two good old Saxon words, *farm* and *home*, are, in our minds, most intimately connected, and suggestive of the seasons of human life, and especially of that spring time, in the yards and gardens of the farmer's home, when birds sing, flowers bloom, and children play. Yes, it is a part of our busy nature to love the *farm*, inbred in our race and the best and noblest sentiment, inherited from old England and those other countries, which have made the word and pleasing associations of *home* historical.

In the astonishing progress of our times, and the intelligence of the age, that which was in former times regarded somewhat as mere practical, mechanical drudgery in delving in the soil for bread, has taken high rank, and the practical art of agriculture has now become, under the auspices of your society and kindred ones, for the promotion of horticulture, elevated into one of the fine arts.

Besides the health and subsistence of the body, you purify the moral sentiments, educate the mind, refine the taste and improve society. The apple is no longer the apple of discord, and has ceased to be the representative of forbidden fruits, and flowers are not "born to blush unseen and waste their sweetness on the desert air." It is your high mission to embellish the landscape with pictures of beauty, culled from the luxurious and diversified fields of nature, and scatter flowers along the

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dreary pathway of life. It is a high and noble object, and consonant with the cultivation and refinement and Christian civilization of our day, and worthy of all honor and encouragement.

Thursday Evening.

HOW SHALL WE SELL OUR TREES?

At the opening of the evening session, GEORGE J. KELLOGG read a paper with the above title, that was listened to with attention.

How shall we induce the people to exchange trees for greenbacks? Do as do the tea merchants and dry goods houses—take a sample on your back and travel; it is so convenient. If this is not practicable, men can be had, too lazy to work, ashamed to beg, but willing to take glowing pictures of fruit, no matter if King of Tompkins, or anything else that is tender, if attractive; sell according to pictures, but deliver as convenient; if something new and rare, sell at fancy prices, but fill with common stock; as for instance, Clinton for Delaware, only call them Delaware. What highly colored clusters the purchaser will have in about three years, in place of the pale amber. How pleased will the good wife be to gather the Cherry Crab in the place of the Hislop and Transcendent. What an interesting field is opened for exploration of new varieties, to the man who gets an hundred seedlings in the place of the most approved varieties of grafts. Who knows but he may originate a Duchess, a Fameuse, an Early May or a Lombard; or, if a seedling grape, what if it should surpass anything known? What a fortune!

But, more seriously, is it necessary to send out agents in order to sell our trees? Will not persons wanting trees, plants, etc., buy direct of the manufacturer. Is it a fact that individuals cannot order direct from the nursery and obtain what they want? Will they wake up to find substitution not only of varieties but names? Have we men of our profession who coolly and deliberately substitute names? We hope it is only by mistake. Can we not sell our trees to the local trade, and direct to the planter? Is it necessary to send out agents? Will not judicious advertising and fair, honorable dealing dispose of all the stock we can raise? What supply have we now for the demand of spring? Have we one-half of what ought to be planted in Wisconsin within the next three months? What is the use of sending your agents into Minnesota, Iowa and Michigan to sell first-class stock, and thereby admit the worthless, tender varieties from the east and south that have so long cursed this fruit-growing state? My brother nurserymen, have we not yet learned what is safe to graft and sure to withstand any of our changing seasons? Have we rightly educated our customers to know that a two-year old tree is worth double one that is five; and can we not sell at prices that shall induce the purchase of the young tree? Do farmers need to buy brush of us, for fodder for their sheep and cattle? Will they not learn to fence their orchards? Must we raise trees fit only for bean poles?

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What shall we do with the lying, swindling tree peddlers that swarm in nearly every community?—these men that buy such stock as they can get cheap—often worthless, never first-class—who fill their orders in every packing ground with the *lie* upon each label, and disseminate this stock all through our state, a curse to the community, a curse to the trade, and such a curse to themselves as ought to send every one of them to Waupun. Tens of thousands of dollars are thus taken from our state annually; and is it not worse than highway robbery? The man that sells me trees, etc., and takes fifty dollars, induces me to spend a hundred dollars in bringing these trees and plants into bearing, and after five years of toil and expectation to find them worthless—is he not worse than a highway robber? Can this not be made a criminal offense? Mr. President, will not your committee on memorials so present it to the present legislature, that these swindling scamps may be stopped in this nefarious business?

Resolutions were adopted to pay the Secretary $50 a year; also the usual thanks to the people of Madison, to railroads, and the Historical Society for the use of its rooms, and the *Western Farmer* was declared the organ of the society.

At the evening session, "How we Grow our Trees," was detailed by Mr. PLUMB, with specimens of budded and grafted trees to illustrate; commencing with the seed, showing the order of growth, comparative development of upward and downward extension, with the progress of the tree from youth to age.

INDUCEMENTS FOR NEW MEMBERS.

The following proposition was presented and accepted by the society:

We, the undersigned, will donate to each person who becomes a member of the Wisconsin State Horticultural Society for 1870, by payment of $3.00, the following named plants, to be packed and delivered at our nearest express office, in the autumn of 1870:

C. H. GREENMAN, Milton, Wisconsin—three Concord Grapes.

J. C. PLUMB, Milton, Wisconsin—one each of two varieties Siberians, not now grown by others in Wisconsin.

GEORGE J. KELLOGG, Janesville, Wisconsin—one Hislop; one Transcendent Crab, two years old.

A. G. TUTTLE, Baraboo, Wisconsin—Rogers' Hybrid Grapes, of two varieties.

CHARLES WATERS, Sperryville, Wisconsin—two Miner Plums, one year on own roots.

J. GOULD, Beaver Dam, Wisconsin—one Tetoffsky Apple, two years old.

STICKNEY & BAUMBACH, Waupun, Wisconsin—three White Grape Currants; Weeping Willow.

G. P. PEFFER, Pewaukee, Wisconsin—one Hardy Grape; two new Siberians.

Messrs. MORROW Brothers—a good advertising of this offer in *Western Farmer*.

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CLOSE OF THE SESSION.

The evening, and the meeting also, closed by a general gathering, by request, of the members of the legislature and others, in the rooms, where several speeches were made by different individuals called out, in conversation, and in viewing the abundant supply of Wisconsin-grown fruits. And many an encomium was heaped upon the efforts of the growers.

The exhibition was the largest ever brought out at any winter meeting, consisting of 575 plates of apples, pears and grapes, mostly named, with some fine new varieties of seedling apples and Siberian crabs of merit; all of which were speedily disposed of in a most happy manner when the members of the legislature, by invitation, thronged the exhibition tables.

The society then adjourned, *sine die*.

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ORNAMENTAL TREES AND SHRUBS.

At the meetings of the Madison Horticultural Society, held on the evenings of the 25th of February and 11th of March, 1870, O. S. WILLEY, secretary of the state society, read the following paper on this subject, which had been prepared for the state society, but crowded out for want of time during the meeting in which to present it for consideration:

In no pursuit of life will the time-worn adage, "a place for everything, and everything in its place" apply with more force and application than in the successful collecting and grouping of deciduous ornamental trees, evergreens and shrubs for the lawn. Many, and I may say most, look upon landscape gardening as one of the intricate sciences of a late day, of which the masses know nothing, and one only to be practised by the few, who have given it their study, time and attention, and who are classed as professional gardeners. I view it in quite a different aspect—as one of the most pleasant pursuits of life, a smattering of which may be acquired by us all, and beautiful in its bearing upon the mind of every man who owns ever so small a portion of God's creation. Not that every one will, or ever could, make a successful landscape gardener and be master of his or her profession; far from it. As well expect all the quacks to be masters of physic. But every man, with but slight observation and study, can choose between a Lombardy poplar and white elm, or maple, for his lawn. I say observation and study are essential elements in the selection and grouping of trees and shrubs. We are prone to acknowledge a tree is a tree; what more? Good so far; anything is better than nothing; but had your eyes been open a little wider, you might have discovered that your selection was in bad taste to couple with your location of grounds or buildings. You must remember that what you want is to add beauty to your home place, and he who has but two or three trees to plant upon his four rods front may do it with that tasteful simplicity which will have the desired result—as much so as if we had the most elaborate grounds of the city. And here we might say, that the beauty of a village or city home, is developed by a very different combination of grouping of trees and shrubs from that of the picturesque scenery of a western river, to the large demesne of a prairie, viewed in its vastness, only broken by nature's undulations. But in either case, the all important feature, for the most desirable and cheap adornment, is found in trees. To realize this in the fullest extent, one has but to be transported from a well protected home, where trees, for shelter, shade and beauty, abound, to

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an unprotected prairie, where, like a desert, even a few stunted trees, if found, are the exception and not the rule; where we too often look in vain about the residences of the oldest inhabitant for that "leafy garniture," through or by which we may estimate their value. I am not to speak of trees and shrubs in an economical point of view; that is not, only indirectly, the mission of this society, but rather of the enchantment which a judicious use of them brings to any home. Despoil a place of this cheap adornment, and the otherwise best place has lost half, yea, more, of its charm. But think what embellishment may be given to so many of our homes by a judicious use of trees. Is your building old and unsightly? Then make it the background of groups of trees. It would be nothing very strange to make the most "ugly" place of our city, the most picturesque of all. If your front door is of some ancient order of architecture, and you have not the means to remodel to a fashionable one, then plant a tree in front of it, and by some slight curvature of your walk, to get around the tree, avoid an abrupt approach, and unsightly things may become a charm by combination.

But what shall we plant? And here, too careful study cannot be given to the selection of varieties, as well as the purchasing of them, with due attention to the cheapness, but not to be too much carried away with them, because cheap, nor yet, with the "light before you," grasp after high-priced things, because they may be new. As a safe and sure guide, buy of known, reliable parties, that is after exhausting the forests of such things as may be suited to your taste and grounds. But I must here remark, that forest-tree selections only apply to deciduous trees, and never to evergreens. And even the former is very much improved, if judiciously nursery-grown. Some very desirable ornamental trees can only be introduced into your grounds from the nursery, where they have been produced from the seed or very small transplanted trees, and by a series of transplantings have become acclimated to a cultivated and refined life, and will endure its hardships. It must be remembered that many of our native trees, like the Indian, do not stand civilization. The bare possibility of an evergreen from the forest succeeding, is removed in practice. Trials, without number, are the result of almost every one who has the least experience in tree-planting, and of the hundreds, and perhaps, I may say thousands, annually brought here from the forests, and sold "cheap for large trees," I doubt if one-tenth can now be found in a thrifty condition, and would not be much surprised if, on actual count, we were unable to find even ten thrifty trees in all the city, from forest plants. The production of evergreens from seed, layers or cuttings, is one involving time and patience. While small, all grow very slowly. A seed-bed of them may attain an average height of two inches the first year, though few nurserymen expect so good a growth; from three to five inches the second; four to six the third, and in about this proportion for the first four or six years; their growth will then be more extensive. These small plants, in the hands of inexperienced men, are almost as sure to fail and he to meet with disappointment, as they are meddled with. To grow them is the business of the professional man, until they have attained the size of from one to three feet; by which time, if rightly grown, they have been transplanted from three to five times, and will be lifted with as much root as top; and if done at the proper time and manner,

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with the usual degree of carefulness, the check to growth is very slight; loss by death so small a per cent. as scarcely to be perceivable. Among evergreen shrubs, perhaps nothing will give better satisfaction than the American arbor vitæ, (*Thuja occidentalis*) either for single specimens or hedges. It bears shearing well, and can be grown in any desirable form, conical or square. I knew a hedge at the east, so firm from the use of the shears, and trained so broad upon its surface (being nearly three feet), as to make a walk for any ordinary man. I wish we had more of this kind of planting in our western grounds. We are told they do not succeed. I would answer, the cause is in the management; neglect while young to properly shear or cut back, for if this is not done while young, the close planting of our hedges tends to make them lose their own branches and become scraggy; but after the base is well covered, no further trouble exists. Chinese arbor vitæ is equally hardy; finer, dark green foliage, of slower growth.

Hemlock (*Abies Canadensis*) in its native habitat is one of the most formidable trees of the forest, but nursery grown, becomes one of our most desirable shrub evergreens; a little particular as to the location given it, delighting more in some cool and shady resort than in the bright sun; it should be transplanted in the early spring.

Balsam Fir (*Abies balsamea*) is especially well adapted to our northwestern, cold climate; sometimes called American Silver Fir, and is one our most ornamental evergreen trees—as single specimens form perfect pyramids—of dark green foliage. This and the Norway spruce (*Abies excelsa*) are the most desirable of the pyramidal growing trees, as well as the most rapid, often averaging more than two feet in height for a term of years. Mr. BARRY records the growth of two, which he recently cut down, as being from two to three feet high in 1841, and on November 12, 1869, when cut down, 64 feet high, diameter of trunk 20 inches; branches resting on the ground covering a circle of about one hundred feet in circumference.

White Pine (*Pinus strobus*), native of North America, should be planted much more frequently than it is.

Scotch Pine (*Pinus sylvestris*) is a valuable foreign sort, hardy; and this, as well as the Austrian Pine (*Pinus Austricana*), with the heavy green foliage of both, contrast well with other trees. They are less pyramidal, and make a happy relief where many trees are planted.

The class of Junipers, of which the American Red Cedar, may be taken as a type, deserve much more attention than they receive. The trailing or prostrate, *Juniperus communis, depresso*, is a novelty in its way, scarcely ever attaining a height of more than a foot, but spreading out over the ground, forming a beautiful dark green bed, and so dissimilar from any and all others, that it should be in every collection of moderate size. This evergreen is never ostentatious and aspiring to overlook its entire surroundings, but humble, modest, creeping, as it were, along beneath its proud associates, its spray rising in beauty, but not loftiness, as if to peep about and watch, unobserved, its neighbors. I have seen it upon the banks of Lake Michigan, in the sand, covering a number of feet in diameter. It often grows from forty to fifty feet in circumference, the main branches lying or resting upon the ground in every direction, forming a dense, evergreen bed, often so much desired

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and sought for in city lots. Many specimens we have seen, were as uniform and regular in their native wildness, as though they had been pruned and cared for by man. It will answer well for covering mounds or planting in rock work. In the shade of larger trees, in barren soils, the rich prairie or garden soils, it is all the same. It thrives equally well.

The Savin (European juniper) is less uniform than most American junipers; succeeds well in almost any soil and forms a pleasant contrast by its low, dense, dark foliage.

In the list of deciduous ornamental trees there are so many good ones, it is difficult to give prominence to any; but probably the American White Elm is fully entitled to the foremost position. It is a native of the entire United States, often attains an enormous size; prefers a deep, rich soil, but will adapt itself to the various localities of the country. With age it becomes quite drooping, so much so as to have acquired the name of American Weeping Elm. Many not conversant with the different elms, make a mistake and dig the red or slippery elm, a tree very much its inferior in every respect. Next to the elm we would place the maple, silver-leaved, scarlet, sugar and rock—all valuable in about the order named. The chief objection to the first is its tendency to split down. To avoid this, cut the top back, say at planting, and then in two years again cut back to nearly first cut, thus forcing a top with more branches, and by so doing avoid crotches. I have never seen a tree split that was thus treated.

The American white, or paper birch, is quite common in this state along the banks of the northern streams, and on the rocky cliffs. It is easily transplanted and of rapid growth. Some trees are drooping and some nearly upright growers. The European sorts, worked on the upright American stems, help to make up that class of trees which should have a place upon every lawn. The white birch is perfectly hardy, highly ornamental, very vigorous; and seems well adapted to the soils of this state. When one considers the beautiful silvery or grayish whiteness of its bark, which often shaggy as it exfoliates in papery sheets, makes a strong contrast with the surroundings; the straight spiral form of the tree, and the long, dark, slender branches, which become more drooping with age, it is difficult to name a tree which will give the planter better satisfaction, than will this American weeping birch. It is equally satisfactory whether planted in clumps or reared as single specimens.

The Linn or American Basswood, makes a fine, clean shade tree. Its foliage is remarkably large. It delights in a good, rich soil, where its branches will have a handsome, well-shaped head.

But it was not my intention to write for you a full description of all the valuable trees that might or should adorn our streets. The task would be too massive and your patience too much taxed. I have described a few, and there are others nearly equal, and some may prefer them to those I have named. In a more extended list we might find the Abele or silver poplar, a rapid grower; a sure producer of sprouts for the little ones; not uniform in its growth, but would be placed in that list where, by a naturally crooked body or wayward limb, we give picturesqueness to the scene, and not that beauty which we would expect in a well-grown specimen of American

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Chesnut or Mountain Ash. The former is admissible in large plantations, as also the Black Walnut and Honey Locust. The Mountain Ash is always welcome, and some of the poplars—Lombardy seldom, and never for a street tree, unless in very long avenues. Cottonwood is very much better, indeed it should have had a place much higher in the list; bears hardship well; affords plenty of shade, and is about equally indifferent to wet or drought; does well everywhere.

Then there are the willows. I wish we had more of the Golden planted. What is there better? Cut it back thoroughly, feed it well, and it is hard to excel it even as a weeping tree. None will, unless it's the Wisconsin weeping willow disseminated by J. S. Stickney. This is as drooping as the common weeping, perfetly hardy, and its cultivation should be more extended. All the others are tender But happily we have in the weeping mountain ash a tree that will sustitute very well. The very pendulous or drooping branches of this tree gives it a striking and peculiar appearance, and where we have so few good weeping trees this should be more entensively noticed. The weeping ash and birch also fill a niche in the arborist's collection.

But I hear you say that for the city garden we do not want all trees and evergreens; these are for the country. Granted, and yet it is a fact that more evergreens are planted in the cities and villages of the west, than by the farmers in the country. But this is all wrong. The evergreens are in every respect a protective tree, and for belts or screens upon the vast prairies they are well adapted, and the bleaker or more severe the climate, so much more will their presence add to the comfort and cheer of the surroundings. Would that I could impress upon the farmers, of this county at least, the utility of more evergreens upon their farms. Expend fifty dollars in one thousand evergreens, and plant them about your prairie homes in this state, they will in five years attain the height of ten to twelve feet, and then when you have realized their blessed influences by an amelioration of the winter's cold upon your stock, and found how much better your orchard does for being in a grove, you will fully realize what a cozy, snug and beautiful place you have, for so small an outlay—not half the farm would buy its beauty. But this is for the country. Here in the city we want our shrubs, our roses, vines and creeping things. Have you not gathered these, and o'er their beauty sung their praise? If not, then let me remind you that there are

"By placid lakes,
Deep in the forest's leafy shade,
Wave plumaged ferns and filmy brakes,
In verdant tracery arrayed;"

and that you have too often within your own reach some of the most beautiful of God's creation; unimagined pleasure—free as the air you breathe. By the road side, in the forests, from the wasteful marshes and the meadows green, we find grasses, ferns, mosses and shrubs fit for any parterre, that only require to be far brought, to be dear bought, to secure to themselves a petted home for admiration. The nurserymen will tell you the demand is for large plants—something for immediate effect. This is all wrong. Few nurserymen strive to make for customers what would answer for "specimen plants," but rather grow plants for the masses. For this reason, the small plants will not be so distorted by crowding as the large

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ones, so that by a little attention to the habit of the plant you can make judicious selections; but in no case be over anxious about their rapid growth. Half or more of our admiration for it consists in seeing it grow, or realizing that the plant is thrifty under the treatment we give it.

Shrubs should be planted early, for some of them are early risers, that is no sooner than the cold of winter is passed, and a few bright days of spring have told of the joys to come than we are reminded that summer is near. But perhaps, this caution is uncalled for, as most ardent gardeners are found with spade, fork and rake in hand as soon as the snow and ice have disappeared. It is not for such that I am writing. At their feet I might sit; but for others, who can only halt for the moment from the delirium of business to take a hasty look, or snuff the breeze as it is wafted from the early crocus, or the snow-drop, nodding in content, and the hyacinth and tulips in their beauty. To such I say, see that your ground is well prepared, that it is mellow, and in such a condition as to be well drained; reasonably rich from nature, or artificially made so; and your plants will be a joy forever.

In the Dwarf Flowering Almond will be your first love, always wanted, popular and yet not half appreciated. Neglect grows it scraggy and ill-shaped, but, with a little attention and cutting back as soon as it is out of bloom, the increased thriftiness and consequent bloom will well repay for the sacrifice. A new white Flowering Almond is said to be very fine and equally hardy, and like the former is loaded in the spring with spikes of elegant flowers almost like roses.

The Lilac—that good old home adornment, when we were boys together, will always be planted. No yard is too small or too large to exclude it. Aside from the common white and purple are the Persian and Chinese. The latter is especially desirable; not liable to suckers or sprouts; flowers resemble the common purple but much darker. In its foliage its chief beauty lies; this is dark, glossy green, very large and rich. These plants are so hardy and indifferent to soil and treatment as to have been sorely neglected, but these, as well as the syringas, should have better treatment, and their beauty would be enhanced. The syringas are all easily propagated—thrive in a common soil; foliage rich and massive; bloom profusely; pure white and very fragrant.

Spirea, whose list is "legion," is not as favorably known as it deserves. This class forms a group of many ornamental shrubs, all quite hardy, and thrive with quite indifferent care. Flowers of various shades of color, from pure white, white with rosy tinge, yellowish white, purple, rose, lilac, pink, etc. From a very large list probably the best six are: *Spirea opulifolia*, five or seven feet high; flowers white with rose tinge; *Spirea salicifolia*, from two to five feet high, white to rose tinted in June and July; *Spirea tomentosa*, common in wet ground, but none the less desirable; about three feet high, with a semicircular head of purple flowers; *Spirea prunifolia*, larger than the previous, flowers by threes or sixes, white as snow, very durable; *Spirea Reeverii*, one of the most elegant of the class, flowers in clusters, white—in June; *Spirea bella*, dwarf, flowers pink.

There are host of other sorts that might be added to this list, but the above is sufficient for any single garden, and planted singly, or grouped, the effect will be equally fine. My advice is to all, plant more of them.

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The Deutzia, from Japan, is as hardy as any shrub in our list, and far more beautiful than some which receive more attention—a profuse bloomer; blossoms nearly white; of easy culture; its foliage forms an attractive feature, and none who see it in the early summer can help but admire its beauty. Then we may plant beside it, what will vie with it in beauty of flower but not in shrub—the Forsythia *viridissima*, which will furnish you with a profusion of rich, golden flowers, and though it is a little tender, it will well repay the care in protection. Don't do without it, nor forget to find room in some shady, protected nook for the Japan Quince (*Pyrus Japonica.*) The brilliant fiery buds and flowers of this plant will attract the most casual observer; and stupid indeed is he who will not find beauty in so fine a flower, for while in bloom there is none more attractive. It blooms very early, before the young foliage is fully grown, and I have known its attraction to be a little premature.

No sooner is this passed from our sight than comes the Weigelia *rosea*, from China. Would that our neighbors there would now send us many more as fine, for this certainly is one of the finest in any garden; very easy in cultivation, succeeding in any good soil; profuse bloomer, so that its branches are loaded, bending gracefully and beautifully with their load of beautiful rose colored flowers.

Tartarian Honeysuckle, a little larger than the last, is always handsome, whether covered with its white or pink bloom or with the scarlet fruit. It is of very uniform growth and forms a fine bush. Equally so is the good old fashioned snow ball, too common to need description; and an ornament to any garden.

Then there is the Flowering Acacia, though a little objectionable on account of suckering, if planted where the roots are disturbed, yet when covered, as it is sure to be, with its profusion of pea shaped flowers of a pinkish white in June, the objection is forgotten, and we welcome it to our home. The foliage is locust like, and though it is not a clear, compact shrub, it is desirable.

Purple Fringe or Smoke Tree, is desirable for its peculiar feather like blossoms. Sumac, once popular at the East, is now mostly forsaken. Its language, "splendid misery," is too indicative of its general character. Few plant it. Altheas are favorites where they will endure the climate, but nature never intended them for a Wisconsin climate. Magnolia, the pride of the south; not strictly a shrub, though in this climate it will always be shrubby, is too tender to pay for the room it occupies. Even if they endure the climate for several seasons, I have seldom or never seen them bloom, and in this is its chief beauty, varying from white, rosy purple, to bluish white.

Mahonia, is an elegant evergreen shrub. The foliage is of a very dark, glossy green, almost purplish, with prickly points, and gives the plant a very rich appearance; remaining on the plant all winter. It should be slightly protected, if not covered naturally by snow.

We must not forget the Privet or Prim, from Europe, where it is an evergreen, with small green foliage. Here it becomes deciduous. Privet forms a fine single bush, but its chief utility is for hedges, growing rapidly and forming a very dense mass, purely ornamental, as it has no thorns.

Euonymus or Strawberry tree has been planted quite extensively, but is too ten-

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der. Foliage is handsome, purple flowers, succeeded with brilliant, scarlet fruit, which hangs on quite late; also a variety with white fruit; but both are equally tender.

Box—the common garden box of the east, and a general favorite for low screens and walk borders, is not adapted to our climate—often tried and as often failed.

But can a garden be without its climbers? It certainly would lack one of the

"Bright gems of earth in which per-chance we see
What Eden was, what Paradise may be."

For no shrub, evergreen or tree can ever take the place of the arbor, well-trained with its vines of Honeysuckles, yellow trumpet, evergreens scarlet monthlies—sweet-scented and Chinese. These are always favorites, but scarcely less so than the trumpet flower, Dutchman's pipe and Virginia creeper, or the American woodbine, most ornamental of all, growing with great rapidity, covering in a very short space of time whole sides of large buildings, and the tallest trees; there is scarcely a yard in our city but may employ this vine to good advantage in screening some out-building, or giving their grounds a varied scene by setting a pole and allowing this vine to climb it.

Then, not forgetting the roses, plant Queen of the Prairie, Michigan, though its flower is single it is almost equal to the former, being more hardy, and such a profuse bloomer that it is very desirable. Add to them the Baltimore Belle—the best of all, protect it in winter, and your group will be amply stocked, your home will be a paradise.

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TRANSACTIONS

OF THE

WISCONSIN

STATE HORTICULTURAL SOCIETY,

Held at Madison, February 7th, 8th, and 9th,

1871.

The Wisconsin State Horticultural Society met, for its annual meeting, at the Historical Rooms, in the Capitol, on Tuesday, February 7th, at 7½ o'clock, P. M., Vice President A. G. TUTTLE of Baraboo in the chair. From thence they proceeded to the Assembly Chamber, where seats had been prepared, and the acting president introduced to the vast audience that filled every spot of that hall, the largest in the city, the Hon. HARLOW S. ORTON, who held the crowd in rapt attention for more than an hour, in the opening address of the society; in which he dwelt with much force upon the great æsthetic principles of horticulture, as it affected mankind; and in congratulations on what this Society had already accomplished.

After the close of this speech, the members of the society returned to their room, and adjourned to 9 A. M.

WEDNESDAY, Feb. 8th—9 A. M.

The society met according to adjournment, Vice President TUTTLE in the chair; O. S. WILLEY, the secretary read the following communication from Dr. JOSEPH HOBBINS, president of the society, resigning his office; and stated that though this

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communication was dated more than a year ago, yet, there had been an understanding that it should not take effect until this time.

RESIGNATION OF PRESIDENT HOBBINS.

MADISON, February 6, 1870.

O. S. WILLEY, Esq.,

Secretary Wisconsin State Horticultural Society:

DEAR SIR—Herewith I tender my resignation as president of the Wisconsin State Historical Society.

It is, in my opinion, absolutely necessary, for the interests of the society, that the president should take an active part in its summer as well as in its autumn exhibitions; nor is it of less consequence, that he should preside at the annual meeting, visit the local societies, and be able to expend much time and attention upon the experimental gardens.

I cannot possibly give to these duties the time they demand, therefore I resign.

Probably it would have been better, had I made you acquainted with my views at the time of election. But, so far as I was able to judge, it seemed to me best, that in going to the legislature for an appropriation, we should appear united. And, further, I had reason to believe, from my having been so long identified with the horticultural interests of the state, that I might be better able to serve the society, than could a newly elected officer, less generally known, and may be, less disinterested.

In resigning, I am sure you will agree with me, that the society's future needs a presiding officer of more horticultural ability, and more leisure than I possess; and if I have erred either in the manner or time of resigning, of this I can truly assure you, the error is one of judgment. My sympathies and best wishes will be with the society, in the future, as they have been in the past.

Very truly yours,

JOSEPH HOBBINS.

On motion of Mr. J. S. STICKNEY, of Wauwatosa, the resignation was accepted. The thanks of the society were tendered to the late president for his very valuable services and aid to it, during the years he has served as its president, and that in recognition of those services he was elected a life member of the society.

The Secretary then read his report, as follows:

SECRETARY'S REPORT.

Gentlemen of the State Horticultural Society:

Another year with its golden harvest, its russet and red-cheeked fruit, has come and gone; and you, the representatives of the fruit interests of Wisconsin, and in part of the northwest, are assembled to compare experiences of the past; report

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the progress of the season, and speak of the adversities past and hopes of the future. With pleasant emotions you may look at the past, in the full assurance that in the main your labors have not been lost. Your efforts for the advancement of horticulture in many respects have met with signal success. With an unprecedented season, noted for its drouth, we may well say the horticulturist was sorely tried; but it has resulted well; nursery stock ripened up, and the orchards brought forth their fruits in season.

SUMMER EXHIBITIONS.

Your practical labors have met with more than ordinary success. The experiment of a June exhibition, so far as Oshkosh was interested, was a success and satisfactory. Owing to the extreme drouth it became a local effort; with two exceptions, every exhibitor was from Oshkosh or vicinity. The local society of that place promised and paid to the treasurer of the state society $100, expecting remunerative returns from exhibitors from all parts of the state; but as stated, circumstances beyond control prevented a general response or attendance; yet pecuniarily it paid. So great was the disappointment on the part of the executive committee at the total absence of exhibitors or products, at the exhibition, save from Oshkosh alone, that those present were of the unanimous opinion that the state society should refund the amount of money paid by the Oshkosh society, and at their request the amount was so refunded. The proceeds of the exhibition, I am glad however to report, were sufficient to cover all expenses and leave a balance in the treasury. The lessons of this first exhibition were beneficial, and I think similar June exhibitions may be kept up hereafter, beneficially. For the greatest degree of success, we, as a class need to compare notes more frequently than we do; and there is no way, time or place better adapted to further this object than by meeting together at exhibitions. In addition to the annual fair, at which I would like to see the feature, horticultural addresses, made more prominent, I think with proper management and care, aided by the experience of the past, we may continue to hold an exhibition in June, at which, by all means, the feature of addresses and discussions should be made as prominent as possible. These, with our annual winter meeting, will make three meetings each year, and sufficient mental material may be found in this state to make such meetings profitable, useful and pleasant. The ball has been set in motion, it remains with you and your future officers to keep it rolling.

MEETINGS FOR DISCUSSION.

Another very prominent reason for holding exhibitions more frequently is that some state industrial organization should be represented by public meetings as often as practicable, among the people. At present there is none—save by those whose primary object is to hold one fair annually.

By a judicious formation of institutes or exhibitions, meeting in different parts of the state, a system of usefulness might be opened up of incalculable importance. Witness the labors of the state society of Illinois in this respect, older in years, but not a whit superior in advantages or ability to make them useful or of interest. Then that of Iowa, much younger than either, but far in the advance of both, in point of effort and accomplishments. Will you sit idly by, and thoroughly convince the world there is no energy in Wisconsin? Farmers' clubs and local horti-

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cultural societies are being organized and doing much good, but they need the influence of a parent society brought to bear, to assist and encourage till one, the other or both are alive with active work in every county in the state.

Do not by any means let the work be confined to horticulture entirely, but the discussions and addresses should embrace every interest pertaining to the work of the agriculturists as well as the horticulturists.

LEGISLATIVE AID.

And here comes home the question of how can this be done? You have but a limited amount of money in your treasury, and such an effort can not be conducted without considerable means. For this purpose let us ask our legislators for a certain amount of money, for a certain purpose or purposes; see that our efforts are well defined; and with our history as a precedent, I think we can have no hesitancy in asking, and they no reasonable excuse for refusing, our reasonable requests.

SEPARATE PUBLICATION OF TRANSACTIONS.

Another legislative question, that should be pressed with a good deal of earnestness, is that pertaining to the publication of our transactions. As is now well known, I suppose to all, our transactions are to be published with those of the State Agricultural Society and limited to one hundred pages. Our transactions of February, 1869, really covering the experience of 1868, appeared in print October 1, 1870, or nearly two years after the date of our annual meeting, while the manuscript of our meeting of February, 1870, is now in the drawer of the secretary awaiting a resurrection morn. This is not as it should be. Our transactions, if worth publishing at all, cannot be put in a book form too soon after our annual meeting. Having consulted the state printer, I find the difference in expense to the state in printing ours when we want them, separated from the agricultural society, will be but a mere trifle. The advantages to us in having them separate will be very great; and there should be a special effort made to effect such a change in the law providing for the publication of the same. We also need more space; one hundred pages will not hold the matter that accumulates, and that is worth printing; and as we now have the accumulations of 1870 on our hands, it would be well to make an effort for combining the whole material up the close of this meeting in one volume—to be published at once, and annually hereafter, yet not to exceed 150 or 200 pages.

THE FALL EPHIBITION.

The annual fall fair was a very fine success in most particulars, and fully came up to the expectations of the officers in charge. I have not time nor space, nor is it necessary to enumerate the exhibitors. All did well. In the floral department there was much the best exhibition I have ever seen in the state. It would have been commendable to any society of even more age, and a better or warmer clime. The experience of the last two exhibitions, has suggested some changes in the premium list, which I have no doubt will be closely attended to, as I am aware that some of the members have given the subject considerable attention. For the accommodation of the fall exhibition, we need a much larger building than any that has ever yet been furnished us by the agricultural society. The past year, indeed,

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I may say the last four years, we have always been immensely jammed. Exhibitions of our products are huddled in too closely; fruit is piled up in forms inconvenient, and unsightly to view, and sometimes not even unpacked for want of room to display it at all. A change should be urged, and I might almost say, demanded, provided of course, that our exhibition is to be held in conjunction with that of the State Agricultural Society. Of the expediency of this there may and probably will be a widely different opinions, but after many years of experience I am of the opinion that it is advisable to continue the partnership business pertaining to the fall exhibition, if an amicable arrangement can be made. It was conceded by all, I believe, that this department added as much if not the greatest special attraction of any of the departments of the fair, and has done the same for a number of years past.

For several years we have had $600 and all expenses paid; we paying for the premiums. This perhaps was all that could have been expected in the past. But through our united efforts, they have become rich, with thousands in their treasury; therefore, for the coming year I think we should have at least $1,000, and expenses paid as heretofore, and twice the exhibition room that was allowed us in 1870. Such a sum, with the accumulations now on hand in our own treasury, will enable us to offer premiums of value and of special notice, sufficient in number to cover many minor items heretofore omitted.

SEEDLINGS AND NEW FRUITS.

I was very glad to see at the fair a fine show of seedlings and new fruits. A special effort should be made to encourage the development of this class of fruits, and drawings should be made, from which cuts can be procured for publication. This may be considered a special work for the committee on seedlings or nomenclature.

REPORT OF STANDING COMMITTEES.

I must again call your attention to securing more full reports from your committees, and especially the standing committees. A vast amount of knowledge might thus be disseminated that otherwise would be lost. I was greatly pleased with the able manner in which a portion of the committees did their work the past fall. If the result of this labor should be published, B. might read that the cion or tree he bought of A. was not a Greening, but the committeeman tells him what it was, and farther, he tells him by what authority he is governed, by a reference to Downing, Warder or others, for full descriptions.

THE EXPERIMENTAL GARDEN.

The horticultural garden, what of that? Lo! the poor Indian, what of him? No one cared for the last and he died; and so has the garden, at least to all intents and purposes as an experimental garden. The trees and plants are there, but growing to no use or benefit, in a manner to develop the object of their planting. No new stock has been planted during the past year. A few have asked if any benefit would arise to the society by donations to it, but as no encouraging answer could be given to that inquiry, no plants have been received. It is a great pity something cannot be done on the part of the state to carry out the object contemplated in the original planting. It is worthy a farther trial, when a strong effort should be made

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to secure its full development. Its merits have been heretofore fully set forth by your ex-president Hobbins and others, and it is unnecessary at the present time to review the ground. The time will come when our legislature may see the necessity of doing something more than has ever yet been done for the encouragement of horticulture. Till then we must bide our time.

STATE BOTANICAL SURVEY.

I have heretofore drawn your attention to a botanical exploration of this state. Every day brings new reasons for urging your attention to it again. Look to the future and anticipate its value; when you and I have passed the ordeal of time's changes. Let us have a specimen of every tree, plant or shrub now living in this state, and only regret our dilatoriness in not having commenced these labors earlier, before so many had passed away.

STATE ENTOMOLOGIST.

A state entomologist should be appointed. His labors would be almost past calculation; yet they require compensation. Will not the state do something towards so worthy an object? As we look over our sister states and see what they are doing, surely it is sad to know that our own state sits with hands folded, doing nothing except merely by voluntary labor.

DONATIONS TO NEW MEMBERS.

I had almost forgotten to mention the result of your liberal inducements to secure members of this society; and even now I have nothing very encouraging to say; but about sixty persons availed themselves of the offer. It was attended with a great amount of writing, some printing and labor to get it satisfactorily before the public, and even then I fear it has not always been done as best it might. Still one thing was accomplished, some valuable lessons were learned, but though, I do not think the society is any more popular to-day, for having undertaken this gift enterprise, yet many thanks are due to those who so kinkly donated from their grounds for the encouragement of horticulture, as well as for the many favorable notices the society received from the press in the state.

I do not wish to take too much of your time, but there are still a few things to which I desire to draw your attention; if I am too lengthy, pardon me, and consider that the reason for my course is because I have not had time to make my report shorter.

DELEGATES TO AMERICAN POMOLOGICAL SOCIETY MEETING.

The American Pomological Society holds its session for discussions and exhibitions next fall. It will be, at least, becoming the position which this society occupies that you appoint a delegate to represent this state at that time; and farther that there be a special effort made to secure the co-operation of the fruit-growers of this state, so far as is necessary to collect specimens of fruits for exhibition. Wisconsin ought not to be behind any state in the union in an exhibition of her fruit products, and while I here only hint at the object, I trust it will be acted upon in the light that may come before you.

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NORTHWESTERN FRUIT GROWERS' ASSOCIATION.

There is a final work to which I wish to draw your attention, of a broader character; one which will bring you into closer communication with the fruit growers of the northwest. Horticultural societies to be educators, their members must be workers. With this, their prime life-work, any means or methods for effecting its object are beneficial. And the more frequent the occasions are offered, the greater the amount of good. In view of this consideration and of your duty to your profession and patrons, I have often thought, during the last six months, of your life-work, and of how fine a field the northwest presents for your labors. The whole northwest is one common tramping ground of the horticulturist; our interest are common. We elect delegates to attend fruit growers' meetings from one state to another. This is both pleasant and profitable. Our friend Adams of Iowa, well expresses his desire, in a letter of November 16th, that this cordiality should be kept up: "I wish very much you would come to Des Moines to our meeting, January 10th, and read us a paper on some subject such as you may select. None of your Wisconsin horticulturists have ever met with us, and you had better do so. Try and come, and bring some of your friends." This is inserted here only to show the desire every state society has for a free interchange of opinions with members of other societies. How may this be remedied or changed to a better form of management? I will tell you; focalize your interests, have one interest common to all; with one place of communion. In a word, have one northwestern fruit growers' association, combining the interests of Illinois, Iowa, Minnesota and Wisconsin, at least, and be also ever ready to embrace that other great northwest which lies beyond this. Let the object of such an association be, primarily, an annual exhibition for a display of fruits, addresses and discussions.

Contemplating this new work, I addressed, in November last, a line to several parties, setting forth my views briefly as above stated, and in every case received the most cordial approval and encouragement. Samuel Edwards, Esq., President of Northern Illinois Horticultural Society, wrote me, November 26, 1870; "Your suggestion seems to me a good one, which, in my opinion, it would be well to give a trial. The finest show of fruit ever seen in the northwest was at the meeting of the old Northwestern Fruit Growers' Association, at Burlington, Iowa, 1855, and the discussions of members in attendance has never been surpassed."

D. W. Adams, Secretary of the Iowa Horticultural Society, wrote me, November 14, 1870, upon the same subject, highly praising the plan. He says: "I take great interest in the subject mentioned, and there seems to be but one reason why the subject should not meet with abundant success, if once started; and I am not clear whether that would prove serious or not. Between southern Iowa and Minnesota there is a vast difference in climate, and consequently as great a difference in the capabilities of each as fruit-growing regions. I do not mean by this that one is *better* in proportion to its greater mildness, but that they are essentially *different.* Some fruits that are perfectly successful here, nearly fail in the south part of the state; and the opposite is equally true. There are many subjects, especially those connected with the hardiness of varieties and species, that are of vital importance to us, and we must discuss and investigate them, for many years yet, and perhaps

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always. These discussions will then be interesting to us; but to those in a milder clime not so much so; and these mainly as affecting others rather than themselves. Lists of fruit for general cultivation, of course, can never be made by such a society, as there is scarcely a single sort that could be recommended over the whole. Even our pet Fameuse is out of its latitude, and of secondary value in southern Iowa; and at St. Paul it is again removed from its proper field. This want of unity of interest is my only fear, and as I before said, I do not know how it will affect the movement. As an opportunity to meet in friendly conclave, talk over our experience and hopes and prospects, discuss the great principles of plant life, and the proper modes of developing the resources hid in the secret womb of mother nature, compare notes on insect enemies, and thousands of other matters of cosmopolitan interest; such a society would be valuable, could it be made such as to bring together the horticulturists of the section you name; there would always be enough talent to draw me from home."

Others have spoken like favorably of the idea. More recently, February 1, 1871, President Edwards writes me: "It rests with you to say shall we make an effort for a temporary organization of a northwestern fruit-growers association." My plan is for a joint interest, as stated above. Each state as far as practicable should be represented in its board of officers, its labors mainly made to turn upon an annual exhibition, to be held at some central, accessible point, but more particularly to be used as a focus around which may gather the combined talent of this great and growing northwest; where we may become better acquainted with one another, encourage the prosperity of the cause we love, do good and be happy.

The report of the secretary was referred to a select committee consisting of Messrs. HOILE, KELLOGG and STICKNEY.

Judge J. G. KNAPP of Madison, presented the following resolution; which laid over for the present, viz:

Resolved, That the state of Wisconsin be divided into four districts, to be called, the southeast, southwest, northeast and northwest districts.

The southeast district shall consist of the counties of Dodge, Washington, Ozaukee, Milwaukee Waukesha, Jefferson, Walworth, Racine and Kenosha.

The southwest district shall consist of the counties of Columbia, Sauk, Richland and Vernon, and all the counties south of them and west of the southeast district.

The northeast district shall consist of the counties lying east of Adams, Clark and Chippewa counties.

And the northwest district shall consist of the counties west of the northeast and north of the southwest district.

Vice President TUTTLE next read a paper entitled

HORTICULTURAL PROGRESS IN WISCONSIN.

Gentlemen of the State Horticultural Society:

It is with no little embarassment that I assume the duties, even temporarily, of the presiding officer of this association, occupying as I do the place so long held by

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one, whose judicious acts and wise counsel contributed so largely to the permanency and prosperity of this society.

We have come to this our annual gathering, as we have been permitted to do for years past, with our ranks unbroken, and I trust, that our meeting together may give new strength to existing friendships and help to advance the interests of horticulture throughout the state. I see before me those who have been pioneers in the horticultural work, who stood by this society in its infancy, and combatted the then popular idea, that fruit could not be grown in Wisconsin; and I congratulate you upon the success, which has followed your earnest and well directed efforts. It is true many of the old popular varieties fail in our rigorous climate; and some kinds which flourish in more southern latitudes, cannot be grown here without great labor and expense; but we live in a healthy clime, and though we sometimes shake with the cold, we never do with the ague, so that we enjoy immensely what we do grow.

WISCONSIN A FRUIT STATE.

In looking back over the last quarter of a century we can see that great changes have taken place in the minds of our people in horticultural matters. There was a time when nearly every experiment in fruit growing proved a failure, and when all the mind and muscle of the people, were given to growing wheat. It was said, that we could grow wheat, and with the proceeds of that, buy our fruit of our neighbors across the lake. Some still follow that practice, though it now seems rather poor economy, to give the product of an acre of wheat for the apples grown upon one tree occupying one-fiftieth part of an acre, and requiring far less labor to grow them. Apples can be not only produced here in abundance, but no where else is the crop so certain. For more thas fifteen years my orchard has never suffered from spring frosts. The farther north any fruit can be grown, the more certain will be the crop. Kansas made a great show of fruit, at the meeting of the American Pomological Society in Philadelphia, which added much to her reputation as a fruit state. The season following finds her fruit destroyed by spring frost; the mercury falling to 14 degrees below freezing, after the trees were in bloom.

ON SORTS OF APPLES AND PEARS.

The list of apples adapted to our climate is already large, and new accessions are being made to it every year, of new and valuable seedlings, and by the introduction of new varieties from Russia and other cold climates, so that we soon shall be able to dismiss many of the old, unproductive sorts. Many of the old sorts should be stricken from the list; where the orchard is designed for the market only such retained as combine hardiness of tree, quality, and great productivenss. In our list are some of good quality but shy bearers, and which, comparatively, pay little profit to the grower; such may do for amateur cultivators, but should not be recommended for general cultivation, or for the market. Where an orchard is designed for growing fruit for the market, there is more danger of setting too many than too few sorts. One variety of known hardiness and productiveness and popular in the market, such as the Fameuse, will yield far more profit than a dozen kinds, as they are ordinarily selected. The time has come, I think, for this society to make a list of apples for those who wish to make fruit growing a business, as this branch of horticulture

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is destined to become one of the great productive industries of the state. The extreme northern portion of this state, with Minnesota, and the region beyond, now being opened for settlement, will afford us a market for a long time to come—a market now for the most part supplied by Michigan fruit growers. There are hundreds of men now upon small farms, gaining by hard labor, a scanty subistence for themselves and families who, if they would set ten or twenty acres in orchards, would in the course of ten years, find themselves as independent as the grain grower with his hundred of acres of the best grain land in the state. If we could plant orchards in the spring and gather immense crops of fruit in the fall they would very soon be as "thick as hops" were in my neighborhood a few years ago. The desire everywhere manifested, of realizing immediately upon investments, prevents very many from any attempt at fruit growing, and keeps the market good for those who do engage in it. To the poor man, where ever he is, toiling hard to get a living upon a few hard acres, I would say, plant an orchard. If you have not got the money to buy trees, buy or save the seeds; raise your own seedlings; go to the nearest nursery and learn how to graft them, give them the requisite care and cultivation, and you will have something better than a life insurance policy, as you will not have to die to realize from it; and in case you should die your family would be better provided for. It is true that all do not meet with success; there are very many who will surely fail anywhere; that place has not yet been found on this earth where such can succeed as fruit growers. It is because they are not willing to give to fruit that care and attention, which they do to ordinary crops. They expect to plow and hoe their corn, but the fruit, if it grows at all, must do so without care. Nobody expects to grow corn by planting in the sod or by seeding the ground and leaving it uncultivated after planting. Treating trees in the same way is very little better. There is not a farm in this state which stands above water, where some kind of apples cannot be grown.

Of pears but few kinds, which have as yet been thoroughly tested, have proved hardy enough for general cultivation; but such as have, are less liable to blight, than they are farther south.

ON GRAPES.

In no branch of horticulture has there been greater progress than in grape growing. Twenty years ago, the only grape thought to be adapted to our climate was the Clinton. This, with the Isabella and Catawba, were planted near the dwelling, in the sod, and generally under the shadow of some tree and left to ramble at will; but now, in the light of a better experience we do not wonder that men supposed our climate was not adapted to the wants of the grape. Kuhl, of Sauk, and Atwood, of Lake Mills, were the first to give the grape that open field culture which its necessities required, and for a long time it was thought that there must be something either in the soil or location which gave them advantagea over others, and insured to them success. But now, when we have come to understand what condition of soil and climate the grape requires, we find that we can grow not only all the new and popular varieties with certainty, but that we have a soil and climate better adapted to the wants of the grape than any east of the lakes. With a mean temperature during the summer months, corresponding to that in the latitude of

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Baltimore, we have in connection an atmosphere so dry that mildew and rot are seldom known. Hartford Prolific ripened last season by August 15, and most other varieties were ripe by September 1. Our vines need winter protection, which may be considered as involving a large amount of extra labor, but that is more than counterbalanced by exemption from rot and mildew, so common in milder and moister climates. There are thousands of acres of land in the interior of this state better adapted for the culture of the grape than any upon the shores of Lake Erie, or even on Kelly Island, land which can be bought at from five to ten dollars per acre; better, because it requires less preparation of soil, and will yield a surer and better return of fruit. The ease with which grapes and all small fruits can be grown should insure at all times an abundant supply.

Gentlemen of the State Horticultural Society: We have passed from under the shadows; the confused mass of opinions and theories incident to the new and untried condition of things has given place to the clearer light of horticultural science. The great extremes through which we have passed have been our high places of observation, where we were able to correct our bearings and adapt our course to meet the wants of the climate. . Our success thus far has been all for which we could have hoped. The future is full of promise. Nature has been lavish of her endowments, and has spread out in magnificent outline our noble state; it needs be filled with horticultural embellishments. Much depends upon your action here. May it be such as shall tend to advance the interests of horticulture until every dwelling in our fair state shall be surrounded by flowers, fruits and shade, proclaiming to every passer by a home of plenty, happiness and contentment.

On motion of Mr. KELLOGG, the chair, by order, appointed Messrs. KELLOGG, FINDLEYSON, WM. HOBBINS, WALTERS and SWAIN, as a committee, to propose the names of proper persons as officers of this society for the ensuing year.

On motion of Mr. FINDLEYSON, the chair, by order, appointed Messrs. FINDLEYSON, ROBY, STICKNEY, PFEFFER and PLUMB, as a committee to revise the premium list for the next annual fair.

On motion of Mr. STICKNEY, the chair, by order, appointed Messrs. STICKNEY, WILLEY and KELLOGG as a committee to make arrangements with the State Agricultural Society; who were instructed to endeavor to obtain the amount suggested by the secretary in his report.

The Secretary then laid before the society the reports of several horticultural societies and others.

REPORT OF THE KENOSHA HORTICULTURAL SOCIETY.

O. S. WILLEY, Esq., *Secretary of the State Horticultural Society:*

DEAR SIR:—I was not without expectation of attending the meeting of the state society, or at least, sending some contribution. But the untoward and sorrowful

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event which has affected Madison equal with Kenosha—happening in close proximity to my business—the burned ruins, the fiery grave of human beings, constantly in sight, has entirely unfitted me for thought.

I can only say, therefore, that the Kenosha Horticultural Society is still endeavoring to solve the problem of successful cultivation of fruits, vegetables and flowers, with so much of actual realization as serves to stimulate those who are really workers, while not enough to prevent the indolent and careless from being discouraged at the *apparent* barrenness of result. We are probably as well situated with respect to climate and soil as any portion of the state; as far south as we can be, and upon the shore of the lake, which as is well known moderates the extremes of temperature, and tends to retard vegetation in the spring, and to extend the season in the fall; two very desirable things for the gardener; securing him from the danger of early and late frosts; although rather tantalizing to the open air grower of early vegetables, who often sees with surprise, the people of the interior in market with early vegetables and ripe fruits, days and weeks in advance of his utmost efforts. On the other hand his corn and fruits and flowers, almost invariably, remain uninjured by the September frosts, and sometimes stand till December, green and luxuriant. We are represented to be rather more favorably situated than our neighbors to the south of us, on the lake shore, so far as the mean temperature of the climate is concerned, attributable probably to the undulation of the shore, and the existence of more timber and groves in this county, than on the flat prairies of Illinois. So that if, with these advantages, Kenosha county should lag behind in the race of improvement in horticultural matters, it must be from sheer sloth and apathy. I might say, that we cannot afford this, and tell why; but I find that my letter from being a simple apology, will prove something more than that. I will close, therefore, by wishing the society a pleasant anniversary; that the work may receive an impetus, and the local organizations attain new life from the contemplated discussions.

S. Y. BRANDE,
President Kenosha Horticultural Society.

REPORT OF THE OSHKOSH HORTICULTURAL SOCIETY.

This society reported the following list of fruits as specially adapted to Winnebugo county and its vicinity:

APPLES—*Class* 1, *perfectly hardy*—Red Astrachan, Duchess of Oldenburg, American Golden Russett, English Golden Russett, Ribston Pippin, Alexander, Tetofsky, Fameuse, Tallman Sweet and Sweet Pear.

Class 2, *semi-hardy*—Keswick Codling, Utter's Red, Domine and Yellow Bellflower. The Bourrassa is recommended by one member of the society's committee (W. L. Strand) as being worthy of cultivation. The same person states that the yellow bellflower has done as well as any apple in his list of varieties; but it is grown on a heavy, clay soil. He thinks it would not succeed so well in a light, sandy soil, and in this opinion he is sustained by Mr. E. Chase, who out of twelve trees planted in sandy soil has lost nine, and deems the other three comparatively worthless.

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PEARS—The Flemish Beauty alone is hardy enough to be depended on.

PLUMS—Lombard, Yellow Egg, Washington, McLaughlin and Imperial Gage are grown.

CHERRIES—Early Richmond may be considered hardy. The Rheine Hortense and May Duke are worthy of a trial.

GRAPES—The diseases incident to grape-growing in other states, as mildew and rot, are unknown in this section. All varieties grown in this state will mature in this county, if they ripen earlier than the Isabella. We regard the Delaware as first; it never having failed in fourteen years to ripen its fruit thoroughly. Next to this, we place the Concord, and Rogers No. 15, (Agawan.) As a market grape the Concord is the most profitable. The Walter, in 1869, did not make much growth; but the past year, it has done nobly; in one vineyard of one hundred vines, set out by Mr. Stearns, the average growth of vine was twelve feet; the foliage is perfect, and as healthy as the Creveling, Rogers hybrids and the other varieties growing in the same vineyard; and it ripened its wood perfectly.

RASPBERRIES—*Caps*—Doolittle, Mammoth Cluster, and Davidson's thornless; the two last are most in favor. Among the red varieties, Clark, Philadelphia, Purple Cane and Antwerp, have each their special friends, and all yield abundantly.

STRAWBERRIES—Wilson, Russell and Green Prolific are the standard varieties. Although last year the average did not exceed two-thirds of a crop of strawberries, we do not hesitate to say that for this fruit and for grapes, especially the Delaware, Winnebago county cannot be excelled either for quality or general largeness of yield.

REPORT OF THE FARMERS' CLUB, LIMA, ROCK COUNTY.

The following varieties of apples are recommended for general cultivation: 1st. Tallman Sweet; the tree is hardy and bears rather irregularly, but reasonable crops in any locality. 2d. Flushing Spitzenberg is hardy and good, and is a regular bearer in any location. 3d. Virginia Crab, (?) is hardy, a great grower, reasonable bearer, and the fruit is good for cider. 4th. Roxbury Russet is hardy, a good grower, but irregular bearer; the fruit is best when grown on level ground. 5th. Harfordshire Pearmain is hardy, a great grower and bearer, and does well on any soil. 6th. Peck's Pleasant is hardy, a slow grower and light bearer, but very regular. 7th. Little Romanite [This name is often used in these reports; is the American Pippin, Green Everlasting or Grindstone meant; or is it the Gilpin? The name is applied to both.] is hardy, a good but irregular bearer. 8th. Red Spitzenburg is hardy, a good and very regular bearer; it does well on high ground. All the above varieties are quite free from ravages by birds, that commonly injure fruit trees.

REPORT OF E. H. BENTON, LE ROY, DODGE COUNTY.

I send the following list of fruit trees, which are doing best in the northern part of Dodge county and the southern part of Fond du Lac: Fameuse, Red Astrachan, Duchess of Oldenburg, Tallman's Sweet, Bellflower, (white or yellow), Fall-wine, Romanite or Rambo, Seek-no-further of all kinds, Smoke-house, Rosseau, and the

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Rhode Island Greening when top-grafted. Other varieties, as Autumn [Late?] Strawberry, Winesap, Pound-sweet, Early-harvest, Golden-sweet, Ox-heart Russet, (Sweet,) [Sweet Russet?], English Golden Russet, Perry Russet, Northern Spy and Twenty-ounce Pippin do well in most locations; but the russets seldom bear a good crop. The Northern Spy is the least productive of any variety; while the Duchess of Oldenburg is the earliest to bear and most prolific. Our soil is principally clay loam; the timber is oak and poplar; this locality is mostly high upland, with very few springs or streams; generally there is only a few feet of soil overlaying limestone rock, into which wells are either blasted or drilled, from twenty to one hundred feet; and it is excellent wheat land.

REPORT OF G. V. D. BRAND, OF OAKFIELD, FOND DU LAC COUNTY.

I have lived six miles from Waupun, on the road to Fond du Lac, for twenty years; and am much interested in the subject of fruit growing. This region was oak-openings, with small prairies, and a clay loam soil. The following apples have been grown hereabouts: English Golden Russet, Tallman's sweet, Red Astrachan, Duchess of Oldenburg, Tetofsky, this is hardy, but very few trees have been planted here; in fact, I know of but three large, bearing trees in Fond du Lac county. The Fall-stripe is as hardy as an oak, so is the Duchess, of which I know twenty large trees. The Seek-no-further bears well all through this and Sheboygan counties. The Perry Russet, Fameuse and Fall Spitzenburg have done well and are hardy. The following have been planted and some have fruited, and appear hardy: Sops of Wine, Autumn [Late] Strawberry, Golden-sweet, Suprise, St. Lawrence, Pound-Sweet, Bailey Sweet, Little Romanite, [Gilpin?] Jersey Sweet, which bears immense crops, Green Sweet, Early Joe, Fall Swaar, Keswick Codling, Northern Spy, Fall Orange, Esopus Spitzenburg, Sweet Russet, Pomme Grise, Yellow Bellflower, and Early Harvest.

Pears.—The hardiest are the Flemish Beauty, Tyson and Buffum. The Tyson is hardy, but does not bear as much fruit as the Buffum; its new wood blackens, every winter, but still it lives and grows. The Louise bonne de Jersey and Belle Lucrative have fruited; and some others as the Seckel, Swan's Orange, Glout Morceau, Early Burgamot, etc.

Plums.—Imperial Gage, Lombard, Orleans, Green Gage, Yellow Egg, and Jefferson; the Imperial has done the best with me.

Strawberries.—Wilson and Green Prolific do well; but the Colfax and Jucunda, on the prairies, are worthless.

Raspberries.—The Mammoth Cluster and Doolittle have done well.

REPORT OF HOLLIS GIBSON, LIMA, WAUPACA COUNTY.

I send you a list of apple trees which seem to be "iron-clads" in this neighborhood. Our soil is sandy clay: Golden Russet, Little Red Romanite [Gilpin?], Fameuse, Saxton or Fall Stripe, Duchess of Oldenburg, Red Astrachan, Tallman Sweet and Sweet Pear.

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REPORT OF WM. B. MAY, GRAND CHUTE, OUTAGAMIE COUNTY.

I had hoped to have attended the meeting of the State Horticultural Society; but find it impossible; hence I do the next best thing, I forward a list of fruits that have been thoroughly tested in our county:

APPLES—*Summer*—Red Astrachan and Duchess of Oldenburg. *Autumn*—Saxton (Fall Stripe), St. Lawrence and Fameuse. *Winter*—English Golden Russet, Seek-no-further, and Tallman Sweet. We feel the need of other good, reliable apples. Others have been cultivated, but they cannot be recommended for general culture, until further trial.

PEARS—The Flemish Beauty flourishes. But few plums have been tried, and the curculios have destroyed the fruit. The first attempts at growing raspberries, was made during the past two years, and only the Doolittle has been tried. The Wilson and some other varieties of strawberries are planted. The Concord and Delaware grapes grow in the vineyards at Appleton; but little attention has been paid to grapes in this county.

REPORT OF JOHN SPENCE, HOWARD, BROWN COUNTY

Having read in the *Western Farmer*, that you desired any person in Wisconsin, who will, to send you a list of the varieties of fruits, which do best in his neighborhood, with the character of the soil, etc., I write my own experience. My place is on the west side of the Fox river, a mile and half from it, and sixty feet above its level; it slopes to the east; the soil is a rich sandy loam, with clay subsoil. It was cleared of timber in 1862; and in 1864, I planted seventy apple trees, which I bought from an agent of Dr. Kennecott, Illinois; as I had come from England, I knew nothing of trees here, so I took whatever he recommended, and planted them out; they all grew the first year. As to what are alive now, I will put them in a list, commencing with the best: Duchess of Oldenburg, Fameuse, Tallman Sweet, Hawkins' Pippin, this is a large green winter apple; I have not seen the name in any catalogue; [This may be the Hughes' American Golden Pippin:] Red Astrachan, Keswick Codling, Westfield Seek-no-further, Red Romanite, (Gilpin), and Autumn [late] Strawberry. I also got two early harvest, one died last winter, the other is a fine growing upright tree; it bore last summer for the first time; a medium size tender red apple, very good and ripe in August. I do not know the name; Rawle's Jannet, and Winter Russet; one is dead and one is living. I will give a list of those that have died; as I think that may be useful. There have died, 1 Early Harvest, 4 Yellow Bellflowers, 3 Red Detroits, 4 Roxbury Russets, 1 Winter Russet, 2 Baldwins, 2 Esopus Spitzenburgs, 1 Domine, 1 Summer Rose, 1 Rhode Island Greening, 2 Northern Spys. I plant no more of those. In the spring of 1867, I planted one hundred trees, consisting of the Perry Russet, English Golden Russet, Ben Davis, Seek-no-further, and Duchess of Oldenburg; all have done well, but two, which have died. I think the Ben Davis will make a first rate tree for this region.

I have planted pears, both standards and dwarfs, but all are dead. I have also planted of plums, Smith's Orleans, Lombard, and the English Damson, but all are

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dead. Four years ago I grafted the Green Gage on wild stocks; one bore full of fruit last summer. Last spring I grafted several different kinds on wild stocks, and they have made a good growth; I think it is a good plan to use such stocks; but I shall know better by and by.

Three years since I bought thirty apple trees from a peddler, who said he came from Rochester, N. Y. Most of the order were to be Tallman Sweets, Duchess of Oldenburg, etc., hardy kinds; but last winter the most of them went up. They were not the kind I had ordered, and I shall never buy again from a peddler.

From my own experience, I should plant in this vicinity, Duchess of Oldenburg, Fameuse, Red Astrachan, Tallman Sweet, Ben Davis, Perry Russett, English Golden Russet, Westfield Seek-no-further, Hawkins Pippin, Keswick Codling, and Red Romanite. There may be others quite as good, but I have not tried them.

REPORT OF G. W. MATTHEWS, OF BURLINGTON, RACINE COUNTY.

The first of the three following lists of varieties of apples, has been tested here during the last fifteen or twenty years, and has proved to consist of good growers, and hardy: *Winter*—English Golden Russet, Jonathan, Domine, Winesap, Dutch Mignonne and Marston's Red Winter—6. *Autumn*—Fameuse, Late Strawberry, Fall Orange, Bailey Sweet, Maiden Blush, Porter and Belmont; the limbs of this last are inclined to split down—7. *Summer*—Red Astrachan, Summer Pippin, Sweet June [Hightop Sweet], Duchess of Oldenburg, Sops of Wine and Benoni—8. The following varieties are hardy, but poor bearers, some of them very poor. Those marked with a *, are slow growers: *Winter*—King of Tompkins County, Clay Pippin [?], Willow*, Rockwell (?), Northern Spy*, Roxbury Russet*, Blue Pearmain*, which last is also a very poor bearer. *Autumn*—Fall Wine and Perry Russet. *Summer*—Golden Sweet, Early Joe, and Yellow Inglestine. The following are half-hardy: Rawles Jannet, a medium bearer, Hubbardston, None-such, a good bearer, but slow grower, Pomme Grise, a little tender and slow grower, Yellow Bellflower, more hardy and a good grower, until about four years ago; since then some of the largest trees, a foot or more in diameter, have died; it is a good grower, but a poor bearer. I have one tree of the Baldwin on a seedling stock, set two feet above the ground, that is hardy, and bears well; but root grafted it is tender. *Autumn*—Holland Pippin, Rambo and Fall Pippin, which is tender, but bears very well. *Summer*—Keswick Codling is a little tender, but bears well; Early Harvest, which used to be hardy, but of late years it is tender. The trees are nearly all dead. Kirkbridge White and Summer Queen are average bearers, but a little tender. We have one tree of each of the following: Keswick Codling, Striped Juneating, Garden, Summer Pippin and Clay Pippin; the last four sorts came from Westchester county, N. Y.; and are worked in the tops of hardy stocks. All the hardy trees are loaded with fruit, except the garden, which is a poor bearer, but a fast grower. We have a sweet Bough grafted in the top of a Rosseau, which is perfectly hardy; the tree loads with fruit nearly every year, and is twenty years old. When the orchard was full we had five hundred trees. The first were planted in 1848; all were set before 1857, except a few that have been set since to fill some vacancies from the loss of tender trees. The soil is clay and sandy loam, with

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rolling surface; and has been cropped with corn and potatoes. The yield has been, in 1867 about 1,200 bushels of apples, in 1868, 200 bushels, in 1869, 250 bushels, and in 1870, 325 bushels.

REPORT OF Z. W. LAMPORT, MAPLE SPRINGS, DUNN COUNTY.

With reference to fruit and fruit-growers in our county, I will say there are none. Our county is comparatively a new and timbered country. The forest timber is elm, maple, basswood, oak, butternut, etc., telling us in strong language that the soil is loose, strong and deep; and has a rough, uneven surface, which, I should think, would render it a fruit-growing country; bnt I confess I am no judge in the matter, having passed my life on the frontiers; but we are anxious to try it. They tell us we cannot raise peaches here, and it is no use to try; but for one, I cannot give it up without a trial. I have been here four winters, and at no time since has the ground been frozen in the forest so that one could not a stick a cane in the ground; and potatoes left in the ground would come up and grow in the spring. What would prevent our raising peaches, if we but protect the tops from sunshine in the winter? Is it not the sunshine that thaws the bark loose from the trees, then freezes again, and kills the tree, or makes a dead side on the surface? I would like to hear from some observer.

REPORT OF B. F. WILKINS, BELLEFONTAINE, COLUMBIA COUNTY.

In compliance with your request for fruit lists, I make out one for this locality. Remaining in an orchard of twenty to twenty-three from planting, are now to be found the following varieties, viz: Fameuse, adapted to nearly any soil or location; Tallman Sweet, adapted in the same manner, but probably bears best on sandy soils; English Golden Russet, fitted to nearly any soil, and is usually found growing best in places partially shaded from the direct rays of the sun. These three trees are generally sound, and in good bearing condition. In orchards of ten to fifteen years planted, may be found Fameuse, Red Astrachan, Fall Spitzenburg, Late Strawberry, English Golden Russet and Perry Russet. These all do well on nearly all soils, but a little the best on gravelly or sandy soils, and are good bearers, except the Red Astrachan and Perry Russet, which bear moderately; Westfield Seek-no-further on same soil. In younger orchards, from three to five years planted, the following appear to do best, and are hardy in the order named. Improved Siberian Crabs (Transcendent and Hyslop), Duchess of Oldenburg, Tetofsky, St. Lawrence, Fameuse, Fall Spitzenburg, Winesap, Tallman Sweet, Red Astrachan, Perry Russet, Late Strawberry, Westfield Seek-no-further, and English Gold Russet. The last does not appear to be hardy when young. In the spring of 1868 I planted eleven of these, and in 1869 eleven more; only seven of them all remain; and yet they received the same care as did the trees of the other varieties above named. Hereafter I shall plant this tree in locations partly shaded from the direct rays of the sun. I planted on a southern inclination, on soil from sandy to heavy clay.

GRAPES—Clinton, Concord, Delaware and Isabella, grow on soils of clay and sand mixed.

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REPORT OF M. E. EMERSON OF DOOR CREEK, DANE COUNTY.

I herewith send you a list of such fruits as have done the best for me.

APPLES.—Northern Spy, Seek-no-further, St. Lawrence, Early Harvest, Tallman Sweet, Perry Russet, Ribston Pippin, Swaar, Esopus Spitzenburg, and Transcendent and Hyslop crabs.

STRAWBERRIES.—Downer, Wilson and Russell.

RASPBERRIES.—Doolittle and Mammoth Cluster.

My soil is clay underlayed with limestone.

REPORT OF I. M'CREEDY OAK CREEK, MILWAUKEE COUNTY.

Agreeable to request, I send you a list of my hardiest apples; premising that my orchard is planted upon stony land, the subsoil being a stiff clay, a northeast exposure; and that many of my trees were top-worked after they had fruited: Fall or Greasy Pippin, Vandervere, Keswick Codling, Rambo, Red Romanite (Gilpin), Summer Rose, Tallman Sweet, Red Astrachan, and Porter Russet. I make this list the more cheerfully, because the horticulturists mention but few of my favorite varieties. The Fall Pippin, Vandervere and Keswick Codling are especial favorites; the trees bear early; and the fruit is large and delicious. I have also fifteen out of fifty seedling trees planted, which have proved worthy of cultivation, and seven of them are excellent.

REPORT OF W. S. HOLLISTER, OF DELAVAN, WALWORTH COUNTY.

In response to your request, I send the following list of apples that I have observed in Walworth county. My father has an orchard in this place, of seven hundred trees, including nearly one hundred varieties, that has been planted twenty years, and which I have always helped to care for, and have carefully noted the results. The soil is both prairie and burr oak openings, a rich mellow loam and clay combined, or lying contiguous. The orchard is sheltered on the east by timber, and the rows of many of the varieties extend from east to west, so as to include soil of all conditions. Among those varieties in which there is no perceptible difference in hardiness and productiveness caused by the difference of soil, may be mentioned the Fameuse, Fall Orange, Domine, Tallman Sweet, Bailey Sweet, Golden Russet, Ramsdell's Red and Jonathan. Rawle's Janet has rather the finest fruit on the prairie. The following do well and are profitable in both prairie and opening soil in this county: *Summer*—Red Astrachan, Sops of Wine, Duchess of Oldenburg and Carolina Red June. *Autumn*—Autumn Strawberry, Autumn Swaar, Bailey Sweet, Fall Orange, Fameuse and St. Lawrence. *Winter*—Domine, Rawle's Janet, Jonathan, Northern Spy, Golden Russet, Tallman Sweet and Willow. We reject the Yellow Bellflower, Rambo, Westfield Seek-no-further and Perry Russet, for after having had twenty years experience with them, we condemn them, most decidedly. We are now testing many other varieties, but cannot speak decidedly of them; yet I think Grimes' Golden is one of much promise. The Wagener is a great bearer and good grower, but I am afraid the tree is not hardy enough.

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At the close of the reading of these reports, Mr. PLUMB presented the following as his own, and also as a list agreed upon, and recommended by the Northern Horticultural Society of Illinois, at its late meeting, at which 150 members attended.

"IRON CLADS."—Red Astrachan, Duchess of Oldenburg, Fall Stripe, St. Lawrence, Haas, Fameuse, Perry Russet, Golden Russet, Ben. Davis, and Willow.

PROMISING TO PROVE "IRON CLADS."—Cable Gilliflower, Paradise Winter Sweet, Walbridge, Alexander Blue Pearmain, Red Romanite, Vandervere and American Pippin; the three last for cooking quality.

Mr. KELLOGG remarked that he thought any list that might be recommended by the society should be very limited in numbers. For that reason he proposed the following, in which all could unite, guaranteeing its hardy character: Red Astrachan, Duchess of Oldenburg, Fameuse, Tallman Sweet, Golden Russet, and Ben. Davis.

On motion of Judge KNAPP, these several reports and lists were referred to a select committee of five, of which the Vice President should be chairman, to report a list of fruits for the action of the meeting. The chair appointed as the balance of the committee, Messrs. WATERS, CURTIS, PLUMB and PEFFER.

On motion of Mr. GREENMAN, the chair appointed Messrs. D. W. ADAMS of Iowa, STICKNEY and STEVENS, a committee to examine and report on the fruits on exhibition.

INGRAHAM GOULD of Beaver Dam, then read the following paper:

APPLE STOCKS.

During the last fifteen years, the public mind has been greatly agitated, in regard to the varieties of apples suitable for the great region of the northwest. During all these years of discussion and debate, I find no mention of the stocks we should use for a basis for the propagation of these hardy varieties; and I think we have too long neglected this subject. I have no doubt that we can improve our fruit in hardiness by grafting on hardy stocks. Why is it that the Dwarf pear is no longer wanted in the west? Simply because it rests upon a tender stock, (the Quince) I am fully persuaded that it is the duty, as well as the interest, of all the nurserymen in the northwest to use western seeds for stocks

I propose to introduce some of my own experience for the foundation of my argument, and let others judge for themselves whether I am right or wrong. My first experience was with three bushels of apple seeds from Pennsylvania, in the spring of 1857. They came up all right and gave good promise, but were not sufficiently large to dig in the fall. The spring of 1858 revealed to me the startling fact that my fond hopes and anticipations were totally blasted; all were frozen to death at the roots. In the autumn of 1858, I bought two year old eastern stock,

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and commenced grafting. In the spring of 1859, I planted 20,000 grafts. They did well and I hoped that the age of the roots would protect them from the frosts of winter; but in the spring of 1860 I was again doomed to disappointment, as I found two-thirds of my beautiful block of yearlings dead at the root. This was a settler, and I immediately turned my attention to finding a remedy. Should I resort to our native crab? I looked around for the wild crab; I obtained some; planted the seed and commenced grafting. I found they were not quite what I wanted; but as they did not kill out at the root I took courage; for by this time I had learned that I must have hardy stocks or not succeed. I was aware that all the tender varieties of apple trees in northern Illinois and Indiana were killed by the cold wave that passed over our country in the winter of 1856–57; and I came to the conclusion that I could obtain the seed I so much needed from those hardy varieties that survived the frosts of that disastrous winter. I planted my seed thus obtained, and found my prospects of success better. I then set out an orchard from the different varieties of crab trees, that I might have seed at home for my own use; I have succeeded and find they do well, and do not kill out at the root. I believe the failure of very many of our orchard trees is traceable to tender stocks. Let us plant Wisconsin apple seeds, and thereby take a grand stride in the right direction.

"But," says the objector, "could you not have saved this vast amount of stocks and labor by mulching?" Why, most certainly I could. I could have covered them with blankets; or, upon a pinch, I could have got snow from St. Paul, which would have been much better. [I see from the papers that they are short of snow at St. Paul this winter, and have been importing from Milwaukee.] This would have been rather expensive for me, in the absence of railroads, at the time I was passing through my trials and tribulations. The fact is, I did not learn everything all at once. I do not find many nurserymen that do; but I find one occasionally that has learned it all, and is finished; but I am an old fogy of 1811, and it takes me twenty-five years to learn what our more recent fast Young America does in an evening. So you see it was my misforturne to be born over sixty years ago. Every tree and shrub is improved by mulching; even an oak grub would make a better growth if properly mulched Everybody should mulch, but many do not; they have not learned the importance of it, and thousands and tens of thousands have not heard the news yet. Even our state senators, or at least one of them, has not yet learned the importance of this matter, for I was in his garden less than a week ago, and found his trees and shrubbery were not mulched. You wonder why a man whose massive intellect towers a foot above all his compeers in the senate chamber of Wisconsin, does not know enough to mulch his trees; but such is the fact and such will always be the fact; you cannot educate the people all at once, and hence the necessity of furnishing hardy stocks.

Even the editors, educators of the public mind, do not know everything. An editor of an agricultural journal in Minnesota, wrote me in June, 1868, that one of his much adored Siberian Crabs in his front yard, had given up the ghost. I told him it was my opinion that it was winter-killed at the root, and he could probably trace the stock back to old Pennsylvania or some other eastern or southern state. He found the root killed, as I suggested to him. Mulching would have saved it

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but the editor did not know enough, or was careless, and neglected his duty, for all that, it cost him a tree that he would not have lost for fifty dollars, for it had yielded its burthen of fruit for many years. One of my neighbors lost a splendid pear treee. He called my attention to it. I found it grafted on a quince stock, too tender for the northwest, and killed at the root. Hundreds of similar cases have come under my observation.

Now, let us unite our forces and advocate the necessity of hardy stocks. I believe that necessity to be a truth, that must prevail. It is not required in all sections, only in the absence of snow, and where frost penetrates the soil to the roots. This includes the northwestern states at least. You may wonder why others have not met with similar reverses. I can tell you why. The soil makes the difference. In their soil the sandy loam predominates, while in mine the clay predominates. You discover, gentlemen, that the import of my argument is, that if we start upon correct principles, then we build upon a solid foundation. This, my experience has most plainly taught me, and if, gentlemen, you would like a text for my discourse, I refer you to Luke, vi: 48, 49.

At the close of the reading, the meeting adjourned to 2 P. M.

2 O'CLOCK P. M.

The meeting was called to order.

The Secretary read the following paper from J. B. RICHARDSON of Sheboygan Falls, Wis.:

FRUIT AND FRUIT PROSPECTS IN NORTHEASTERN WISCONSIN.

In this, your honorable committee has assigned me a much larger field, than I feel competent to fill; and so, in this effort, I will confine my remarks chiefly to the timbered counties, where most of my experience has been for the last sixteen years. All that were so fortunate as to locate within the timber regions of Wisconsin, must admit, that we have many advantages over the prairie sections in fruit growing; we have never experienced so severe a drouth, but that there has been a fair crop raised; and we have never experienced such extreme cold as those do in the open sections of the state; the advantage of our timber, as an equalizer of the climate, is fast becoming appreciated by the more intelligent planters. Our soil is variable in its character, so that all fruits, adapted to our climate, can be planted in such soils as are best suited to their growth and prosperity. We have a strip of land lying along the lake shore, and extending back from three to five miles, that is considered rather poor for fruit, but all small fruits, with the exception of grapes, do well on it; and the most hardy of the larger fruits, do very well when properly planted and cared for. This lake shore country is exposed, somewhat like the open prairie, it is short of timber and in winter the trees suffer for want of protection; it is all exposed to the severe northeast storms, which are very blighting to both the

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fruit and tree. In our inland towns men are planting largely and understandingly, compared with ten years ago, so that we now plant trees with as much confidence as almost any other crop. We see, by the different fruit lists published through our *Western Farmer*, that we have many of the old and highly esteemed varieties of the east growing here in this timber region, that do not appear in the list of other parts of the state, and we could hardly be content with confining our planting strictly to the hardy list published for the state at large. We find, by experience, we can do very well with many of the half hardy kinds that are found throughout the state, and have found them not only desirable but profitable, as our lists will show. Too much cannot be said in favor of protection. We esteem it of the greatest importance, even here in the timber region of Wisconsin, to begin to plant deciduous and evergreen trees as wind-breaks. We have many townships, already nearly destitute of timber, and the cold west and northeast wind is becoming very severe and uncomfortable in them.

But few have begun to realize how fast our forests are being swept away by the woodman's axe; it is astonishing to any one not familiar with the facts. The department of agriculture says that during the space from 1850 to 1860, twenty millions of acres of timber was destroyed, and the land put under cultivation. And from 1860 to 1870, it is estimated by the last census, that not less than one hundred million acres have been so cleared. Consider a moment, and you must admit that within fifty years there will be an actual famine for wood and timber. It is estimated that there is yet standing in Wisconsin only 3,000,000 acres; in Michigan, 4,060,000, and in Minnesota, 3,630,000. The total amount of lumber these will yield is estimated at 50,612,500,000 feet, sufficient to keep up the supply for only about fifteen years. At this rate of destruction a few years will find these new states as destitute of their forests as some of those west of the Mississippi. This uncovering of the face of the earth renders rain less frequent, and when it does come it is in the shape of a deluge, and produces, alternately, the opposite extremes of burning droughts and destructive inundations. These evidences of changing climate are becoming more frequent as the destruction of the forests proceed. In the old world, the latter results have followed the disappearance of the trees; regions that previously were of the most fertile character, have become entirely divested of herbage and are now barren deserts. A similar fate, in the United States, can only be avoided by restoring in a measure, to the destitute parts of the country, a portion of its forests. As I said above, the forest is an equalizer of our climate. Trees we *must* have. Then as nurserymen, as fruit-growers, we should aid and encourage the planting of forest, as well as fruit trees; for without the former we can hardly succeed with the latter. When both are combined, all that pertains to beauty, comfort and usefulness, to ourselves and future generations, will have been accomplished.

APPLES—*1st List.*—Hardy in both nursery and orchard throughout the timber, and most of them throughout the state; esteemed in the order named: Red Astrachan, Early Red, Williams Favorite, Sops of Wine, Fall Stripe or Saxton, Duchess of Oldenburg, Fall Harvey, Fameuse, or Snow, St. Lawrence, Autumn Strawberry, Haas, Calvert, Perry Russet, English Golden Russet, Tallman Sweet, Northern

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Spy, Plumb's Cider, Rawle's Janet, Canada Black, Yellow Bellflower, Westfield Seek-no-further, Ben. Davis and Grimes' Golden for further trial.

2d List—Half hardy, that we find both desirable and profitable, but will not thrive under all circumstances: Benoni, Primate, Carolina Red June, Keswick Codling, Early Harvest, Elkhart, by E. Tallmadge, Richards Graft (new), Bailey Sweet, Gravenstein, Tallow Pippin, or Queen Ann, Rambo, Holland Pippin. Bellmont, Hubbardston None-such, Domine, Baldwin, Esopus Spitzenburg, Rhode Island Greening, Swaar, King of Tompkins County and Munson's Sweet.

List of Pears—Both hardy and early bearers, esteemed in the order named: Flemish Beauty, Sheldon, Nouveau Poiteau, Pratt, Duchess d'Angouleme, Louise Bonne de Jersey and Vickar of Winkfield.

Plums—Yellow Egg, Purple Egg, Lombard, Bradshaw, Imperial White, General Hand and Duane's Purple.

Cherries—On any soil—Early Richmond or Kentish, English Morello Purple (with good drainage and proper protection), Reine Hortense, Belle Magnifique, and May Duke.

Raspberries—*Hardy*—Doolittle Black Cap, Richardson's Black Cap, Ohio Everbearing Yellow Cap, Davidson's Thornless. *Half Hardy*—Brinkle Orange, Philadelphia and Red Franconia.

Blackberries—*Hardy*—Kittatinny, Needham's White and Wilson's Early.

Strawberries—*Hardy*—Wilson's, Green Prolific, Lening's White and Triomphe de Gande.

Currants—Victoria Red, Cherry Red, White Dutch, White Grape, Black Bangup.

Our experience has been rather limited with grapes, though so far as it goes we give it. We esteem the varieties in the order named for profit and family use: Delaware, Concord, Isabella, Hartford Prolific, Iona, Creveling, Adirondac, Clinton, Diana, Northern Muscadine, Rebecca and Black Cluster.

The following paper was then read by H. W. Roby of Milwaukee:

PLEASURES AND BENEFITS OF AMATEUR FLORTICULTURE.

When called upon by your Secretary to contribute a paper upon the pleasures and benefits of amateur florticulture, it was with a good deal of misgiving that I accepted the invitation, and promised to do what I could to conserve the interests of this society, in the way of throwing out a few thoughts and suggestions for the consideration of those, possibly, less familiar with the subject than myself. My field of labor is the great broad world, among the millions of human beings who inhabit the earth, and who love and enjoy flowers—those mute tokens of divine blessings. Here I am to gather up and lay before you a few bouquets of thought and observation, hoping that the collection and arrangement may receive your approbation.

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PLEASURE

is one of the great objects and aims of life, and human beings seek it in such diverse and manifold ways, that it would require a very large volume in which to record them all. Pleasure is as much one of the necessaries of life as the bread we eat; it is the mainspring of human action, the acme of human ambition. The more continuous pleasures we enjoy, the more epitomized is our pain and tribulation. Pleasure, like the volume of a mighty river, springs not from a single fountain head, but from almost innumerable tributaries, and it is my province, in this paper, to consider but one of the many tributaries, from which pleasure is derived, namely: the cultivation of flowers as a pastime, a recreation, an educational aid, and not as a source of revenue and income. The pleasures of florticulture are so blended and connected with the benefits thereof, that, to treat them separately is a very difficult task, for, when we receive a benefit from any source, we are almost sure to be the recipients in a greater or less degree of pleasure at the same time.

The cultivation of flowers is one of the most pure, elevating, refined and enobling avocations, to which human industry can be directed. It is at once attractive and captivating. It absorbs, for the time being, the whole attention and thought of the cultivator, and relieves the mind from that absorbing, corrosive care which is the outgrowth of constant application to business pursuits. Continued mental and physical exertion, directed to any one object, soon begets satiety, and when this occurs a change becomes necessary for the relief and recuperation of the wasted energies and faculties. From business of all kinds, whether in the counting-room, the study, the office, the store, the workshop, the busy marts of trade, at the plough or the anvil, people must have respite, rest, and recreation; and I hesitate not to say that one of the most pleasing and profitable of all diversions in the world from incessant application to business is horticulture. It is one of the hand-maids of science, an infallible tutor in the cultivation of taste, perception, observation, and a love for the beautiful in nature; and it brings in its train no evil associations, and leaves behind no regret, except the regret of not having made more of unreturning opportunities.

One material item of pleasure derived from floriculture, consists in the additional charms and attractions that floral embellishment gives to *home* surroundings. There is an untold amount of pleasure in the fact that our homes are the most alluring and attractive spots on earth; and nothing adds more to the charm and enchantment of home than skillfully constructed and arranged floral embellishments. It is well known that the English are a more staid and settled class of people than we are. And why? Because their homes are more charming and pleasant than ours. They give far more attention to the tasteful decoration and adornment of their homes than we do; and many are the high-toned and truthful commendations by which American travelers abroad speak of the lovely cottages of England, with their beautiful sylvan and floral enrichments. The Switzer in his mountain home, confronted by the severest of hardships and toil, regales himself at nightfall and at early dawn with the sweet perfume that is wafted to his humble cottage by the mountain breezes; and his eye rests with delight and satisfaction upon the trellises of clambering vines which cluster about his dwelling; and he teaches his children

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to love the flowers, as they instinctively learn to love the inspiration and freedom of the mountain air. The Scotchman, with his whole soul, revels in the enchantments and sombre grandeur of the ruined towers and beetling cliffs of his native land, but he forgets not to love, even to veneration, his blue-eyed violet and his mountain daisy. The German takes not more to his favorite glass of beer, than to his brilliant and gorgeous display of flowers. France would not be France if her countless flower-gardens were swept away, and Paris would not be Paris without her flower markets and her flower venders. Even the "Heathen Chinee" turns with pleasure from his pipe of opium and his cup of tea, to his garden of asters, pinks and primroses. From the time that Adam and Eve first looked upon the garden of Eden to the present day, flowers have been, and always will be, the richest, rarest, and naivest *thought types* made use of by eloquent men. The student who desires to acquire an oratorical power with which to captivate and win all listeners, goes more frequently to the flower gardens, than to the grand battle-fields of earth for his analogies, figures, similes and personifications, and they in turn as freely reward him with enlarged powers of description, comparison and likeness. Viewed from all the stand-points, from which the inquisitive mind may take up its look-out, no lesson in the book of nature is more fascinating than the lessons of flowers, and the mysteries of none more inscrutable.

We know from our knowledge of geology, the laws of gravitation, reflection and refraction, how that sublime wonder Niagara was produced; and yet, with all our knowledge, with all our study, with all our research respecting the mysteries of nature, no man can explain how nature's subtle chemistry transforms the cold, dull earth into the living, active, growing organization of any plant. We can explain with tolerable satisfaction, how nature paints the rainbow. But who can tell how she paints the rose, or the lily? We can explain to our satisfaction, how intoxicating spirits are distilled from the cereals of the land, but we cannot explain the processes of nature, by which she distills from a part of tasteless, odorless earth, such perfumes as those of the heliotrope, lily or the mignonette. These facts illustrate the truthfulness of a remark by Governor Seymour of New York, at our last state fair, when he said "we live in God's own museum of wonders." In the language of Sir Humphrey Davy "flowers are the master work and crowning glory of nature in the vegetable kingdom." Mr. Colman, a great agricultural writer, says "I have said and written a great deal to my countrymen about the cultivation of flowers, ornamental gardening, and rural embellishments; and I would read them a homily upon the subject every day, of every remaining year of my life, if I thought it would induce them to make this a matter of particular attention and care. When a man asks me what is the use of shrubs and flowers, my first impulse is always, *to look under his hat and see the length of his ears.*"

So important a place do flowers hold in the public mind and estimation, that funeral rites, marriage ceremonies, social and friendly gatherings, dinner and pleasure parties, the appurtenances and appointments of the sick room, places of public worship and the halls of legislation and education, seem to be incomplete without the presence of flowers. No article of ornamentation in the school room affords children so much pleasure as a tastefully arranged boquet of flowers. A little cir-

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cumstance occurred within my own observation at the close of last summer, which forcibly illustrates how much importance some people attach to flowers. On one of the last golden days of autumn, just after all the more tender flowers had been swept from the garden by frost, an acquaintance of mine happened to be in my garden, and seeing some half hardy annuals still blooming in the flower-beds, said to me, "Oh, let me have a few of those to put on the coffin of my neighbor's dead child, for they are very poor and have no flowers." Regretting that I had nothing more appropriate for a funeral decoration, I gave him the best I could select, and the matter soon passed out of my mind. About a month afterwards I met the same gentleman again, and the first thing he said to me was: "Oh, you don't know how much pleasure those flowers gave that little dead child's father and mother. It made them very happy to think that their child was not to be buried alone, but could have some flowers on its coffin. Flowers give us so much pleasure that we copy them more than anything else in nature, into designs, patterns, and nearly all manner of decorative handiwork. We see the representation of them in the patterns of dress goods, shawls, carpets, on furniture, silverware, jewelry, wall paper, pictures, vases, flower-pots, stoves, architectural adornments and enrichments, and in thousands of ways do we keep flowers, or a representation of them before our eyes. Thousands of people spend their lives in the manufacture of artificial flowers, and so expert do some of them become, that it has been said, "the birds of the air are deceived into coming and pecking at their skillful imitations."

By the expenditure of a little time and money, the amateur, as well as the professional florist, may have the pleasure of summer in the midst of our cold, bleak winters. I saw such a forcible illustration of this a few days since, that I take the liberty of recording it here. On the 14th of last month, during the severest snow storm that has visited our state for years, and while the wind, which blew with great violence, was tossing in wild wreaths the fleecy shroud that was fast mantling the earth, I stepped into the tropical house of the Hon. Alexander Mitchell, of Milwaukee. There I saw flowers in full bloom and vigor, that live and flower only in a tropical temperature, natives of India, Africa, Australia, South America, and other countries in the torrid zone, all in full luxuriance, and removed only the thickness of a pane of glass from the pelting, merciless storm of a northern winter.

THE BENEFITS

of floriculture are of two different characters, direct and remote. Among the direct benefits are a pleasing and exhilerating diversion from ordinary labor, to pleasure, recreation, a health-giving and health-restoring exercise, both physical and mental; and among the remote benefits are the great facilities afforded for education by way of object lessons; pure associations, an inclination to the study of the physical sciences, a broader snd deeper knowledge of the grand domain of nature and a great variety of others. Grown up people, as well as children, must have recreation and diversion, and will find it somewhere, either at or away from home. If they find it at home, then home and its surroundings become the great magnet and center of attraction to them, and its influence upon them will be irresistible. Under the genial and kindly influence of home, children will grow up better men and women, and grown people will pass into the fruitage and harvest of life with fewer regrets

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for the abuse and misuse of valuable opportunities in life. There is no recreation more conducive to pure, elevating trains of thought than that which comes from contact and association with flowers, and it brings in its train none of the corrupting and vicious influences with which the world is so rife. It is a health-giving and health-restoring exercise, which the Rev. Henry Ward Beecher says, "may be made a very important auxiliary in maintaining the health of body and purity of mind." It calls into play a class of organs and functions of the body and mind which have been dormant during the strain of business, and is therefore both a pleasure and a benefit.

It is one of the greatest natural means, that is within the reach of everybody, for the cultivation of taste, perception, order, form, purity, delicacy, gentleness, observation, and love for nature. A person cannot attend to the raising of flowers and plants, without more or less study, and this study does not end with learning how to arrange a flower-border or flower-beds, or flowers in the window, or conservatory, for, as soon as one diffiulty is overcome, and one object attained, another and another is at hand, through a long chain of sequences, and all are in turn pleasantly mastered. The taste of the ameteur florist is not fully educated, until the laws of color are understood; and in these studies the cultivator's knowledge of form must be stimulated; and his studies run on and on until the grand formal harmony of all things in nature, is more fully realized and appreciated. With color, form and order cultivated, ideality springs up, and the mind is filled with pleasurable images, images of the unseen as well as the seen. From what we see, hear and read, we are enabled, many times, to recognize things at first sight, that we never saw before; and the better our knowledge of things present and seen; the nearer correct are our ideals of things not seen. The pursuit of florticulture must be meagre indeed, if the cultivator does not learn something of the laws of generation, incarnation, and infloresence; and such studies always afford a vast amount of pleasurable, recreative diversion from the active business and duties of life. But, long before all this is accomplished, the cultivator looks out beyond his own window, conservatory or garden, takes a walk into the broad, fertile garden of the world, goes to the book of nature, and begins to read the lessons of the landscape; and, as he reads, his sentiments, thoughts, feelings and aspirations begin to expand and grow, and he comes more and more into harmony with nature and the correlation of all created things. His thoughts come pulsing, quick and strong; and he bursts out into the melody and harmony of poesy or song. It is through such inspiration that many of the grand poems and songs, which delight and charm us so much have been written. Florticulture leads almost inevitably to the study of botany more or less thoroughly, according to circumstances; because, as soon as the cultivator learns the names, nature and habits of his own collection, however large or however meagre, he is filled with unrest and dissatisfaction, until he gains a wider knowledge of the earth's flora, and becomes acquainted with the plants and flowers of other countries and climes. The cultivator of plants and flowers is constantly invading and traversing higher planes of knowledge and broader fields of study, for before he fully understands the laws of vegetable combination and development, he has obtained a considerable amount of useful knowledge in chemistry; and he is

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not content to stop there, but goes on to the study of the correlations, between animate and inanimate nature; and he learns more or less of the medicinal properties of the vegetable kingdom.

I do not wish to be understood as saying that the amateur or even the professional florist must understand all these things, for, quite ignorant people are sometimes very successful in growing flowers. My object is to point out some, not all, for they are too numerous, of the allurements, that, from the time the first flower is grown by us, to the last day of life, are constantly charming and beckoning us onward, from a lower and narrower to a higher and broader plane of knowledge and usefulness. The course of study and research that is likely to follow from the cultivation of flowers, aids very much in filling up one great deficit in the common course of education. Ordinarily, we give far too much attention to the study of mere *words*, instead of *things*. To illustrate: We know but very little of the emperor of China; many of us may have read personal descriptions of him, possibly may have seen his picture, and yet our ideas of the personalities of the man are very meagre indeed, while our neighbor, of whom we never read a word, is very well known to us; and we recognize him by his voice, his walk, his dress, and we should recognize him among ten thousand people, simply because we *know the man* and not merely his name. If I were able to repeat with alacrity every name in the vocabulary of natural objects, yet, if I knew nothing more than the names, I should probably cut a very queer figure, if I were to enter a botanical or zoological garden, and attempt to make a practical application of my knowledge. *Per contra:* If I were thoroughly acquainted with botanical and zoological physiognomy and habits, I should feel quite at home in either place, although I could not give the name of a single specimen before me. But how much better than either, would be the combined knowledge of both?

Floriculture engenders a growing love for that kind of study which leads to real and not artificial knowledge. If we should cultivate in our garden or window, one single plant or flower, native of Japan, China, India or any other distant land, and learn its habits and nature, we should feel that we knew more of that country than we did before, and by our knowledge of the laws of harmony and correlation in nature, we should be able to recognize in our neighbor's garden or conservatory, another plant or flower native of the same country; and thus, knowing one-half of nature, we could easily learn the other half. There is a starting point in every enterprise or undertaking as well as to all life, growth, development or betterment. Floriculture is a good starting point, from which to make progress in the onward march of natural education; a good chapter to begin at in the reading of the great book of nature. A flower-garden is a better school for children of tender minds and years, than all the other schools of the land put together. It is a better study for them, than all the books that could be heaped upon the same ground. When the bright sunny days of spring-time come, let children understand that a corner of the garden is theirs to plant, manage and enjoy unrestricted to the straight-jacket idea of raising nothing but what pays directly in dollars and cents, and in nine cases out of ten they will grow up full of strong attachment and love for home and the healthful exercise of tilling the soil. If I were asked, to advise as to how to

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make the most unpleasant and intolerable place in the neighborhood an inviting and attractive homestead, I should not say, go to work and build the finest house in the neighborhood on the place, but clean up the rubbish about the place, lay out, plant and cultivate a flower and vegetable garden, train ornamental climbers about the house, and over the most unsightly places, and instead of its being the most repulsive place in the neighborhood, it would become the most attractive and pleasant. Governor Austin of Minnesota truthfully said at our last state fair: "A flower-garden and a little grove of trees is almost as contagious as the small-pox. The girls in the next house will tease the old gentleman the next year for a little patch of ground to plant with flowers, the boys will find time between planting and hoeing to dig up and transplant a few shade trees, and a new order of things will be inaugurated."

If the ladies of our cities would give as much time and attention to the adornment of their homes and flower-gardens as they spend in worrying over the sickly whims and fancies of having the finest and most stylish turnout, the grandest and most dazzling equipage in the city, their physical and moral tone would be as much improved as their homes and gardens; and their doctors and druggists' bills for prescriptions, stimulants and cosmetics would be very much reduced. If, instead of the (sometimes bitter) rivalry between neighboring ladies as to whose *establishment* should be the most gaudy, their rivalry were turned into that exhilerating emulation as to whose flower garden should be the most resplendent and beautiful, that morbid, deathly palor, so observable upon our streets and in public gatherings, would be dispelled, and the rose-bloom of health and true hilarity would supplant it. And, if they would spend as much time and money in cultivating flowers, as they do in buying and reading trashy and corrupting literature, their health, their morals and their stock of useful information would be greatly improved. If men would give more attention to the cultivation of a vegetable or flower-garden, or both, and spend less time on the streets, in saloons and corner groceries, listening to or dealing out small talk, drinking beer, or what is worse, breathing foul, noxious atmosphere, their physique, their minds and their bank account, would all be very much improved.

It is now a pretty well settled principle of science, that plants act not only as beautifiers, but as scavengers and purifiers, so to speak, of our apartments. Human beings, as well as animals, very soon vitiate, and render deleterious to health, the atmosphere of any confined place where they live, by the exhalation of carbonic acid gas. Plants abstract this gas from the atmosphere, it being their principal food and nourishment, and exhale to the atmosphere, in return, pure oxygen, which is the principal life-sustaining element in the air for human beings and animals, and thus, plants have a very beneficial agency in purifying the atmosphere in a close apartment, and keeping it in a state of healthy equilibrium. The old theory, that plants in a room exhale the same carbonic acid gas during the night that they inhale during the day, is pretty thoroughly exploded, and has no more reason in it than would have the assertion that the human stomach, instead of assimilating the important chemical elements from the food taken into it, excrete the whole mass together. There is such a thing as is justly called, *unconscious tuition*. It lies in

G.—Hor.

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the line of habit. It comes from association, companionship, constant familiarity, the atmosphere of perpetual contact, from what we are so habitually conversant with that it ceases to be observed. This tuition, silent, imperceptible as it is, is yet the mightiest that lays its hand unbidden upon us. And it behooves us in life to choose such companionship, to walk amid such surroundings, and to breathe such a moral and spiritual atmosphere as shall make us, like the flowers, the admired and loved of all, and the evil genius of none.

This paper was received with great favor by the audience, and after a few words of commendation, without any disagreement upon the merits or the principles enunciated, the following paper from S. D. CARPENTER was read by Judge KNAPP; the author was not present:

GRAPE CULTURE IN WISCONSIN.

In responding to the invitation, to present the State Horticultural Society with my views on cultivating the vine in Wisconsin, I have to say, by way of apology, what every writer is licensed to offer, that my "practical experience" does not entitle me to rank as an "oracle of the vintage." Having picked up some little knowledge by study and experimental tests, I am willing to impart to others the results of my experience and observation, for all they are worth. Some twelve years ago I purchased a few vines, setting them in my garden, and paying no particular attention to them for three or four years. Indeed, my occupation would not permit me to divide my attention between my office and a dozen grape vines. The varieties I first planted were the Concord, the Diana, the Delaware, the Northern Muscadine, the Marion Port and the Fox, or Sage's Mammoth. The three last named proved utterly worthless, but the Concord and the Delaware yielded so large a profit on the small attention bestowed upon them, that I resolved to extend the quantity, and to more thoroughly study their nature and the best method of increasing their usefulness. I accordingly prepared a small piece of ground, spading it two feet deep—laying a good supply of straw and litter in the bottom of each ditch, with the upper soil thrown in first, and the lowest strata of soil on top. This was in the fall, and before planting time in the spring, I had pretty much covered the surface with coal ashes, apple pumace (from making cider), and a light dressing of manure. In the spring I pulverized the whole piece and set it to vines, in rows four feet apart and three feet between the vines, intending to "thin it out" as the vines became old and strong, but as yet I have not done so, and the mass of foliage and fruit each year has exceeded my most sanguine expectations. I am satisfied that I ought to reduce the number of vines by at least two-thirds, still, as my other duties have kept me away from home most of the time, I have paid very little attention to my grapes, and while I might with tolerable safety, give directions to others how to proceed, I confess it would be at war with my actual practice. The varieties set on this piece of ground, were the Concord, Isabella, Diana, Hartford Prolific, Delaware, Northern Muscadine, Marion Port, Rebecca and Catawba—in all near 200 vines. Some two years thereafter I planted 1000 vines of Concord on

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ground plowed twice, but new and full of live roots of oak trees that had been grubbed, so that I could not pulverize it as I wished.

I erected trellises before planting and placed the rows five feet apart, with four feet in the rows. Nearly all the plants had strong roots, and grew with a strong, healthy growth. Immediately after setting, I covered the whole ground nearly six inches deep with straw. Having covered my earlier settings with straw, instead of earth, to protect them from the inclemency of our unfriendly winters, and having met with such good success, with that material, I resolved to carry the experiment to its ultimate, and so far as I am capable of judging, with the best results; for the straw not only preserves the cane and the fruit buds from the sleet and frosts, which, unprotected, are almost invariably destroyed in this climate, but it answers several other valuable purposes:

1st. The straw keeps the frost in the ground in the spring, longer than it would be kept there if the ground be bare, thus keeping the buds retarded, so as to be completely out of the way of late frosts.

2d. This check in the spring is more than made up by the stimulating heat of summer, aided by the retention of the sun's heat by the covering of straw during the night, and this artificial stimulus ripens my grapes a week or ten days earlier than their season without the mulching.

3d. Straw covering has proved more efficacious, in saving the vines from injury, than any other covering I am acquainted with. I have never lost a single vine, while seven-eights of all the vines in this county, covered with earth, a few years ago, were killed by an early sleet and accompanying freeze.

4th. The straw covering keeps the ground constantly moist, even during the obstinate drought of last season, and is supposed to greatly prevent rust, odium or mildew, rot and blight, as I have had nothing of the kind on my vines for the whole period of my experiments, either in dry or wet seasons; except last year, which was exceedingly wet and backward, I noticed a few berries on the Catawba and Diana that exhibited the dry black rot.

5th. It was predicted by others, and in fact somewhat feared by myself, that the straw would be a burrowing place for mice and rabbits that would destroy my vines, and be a nest for the propagation of insects, yet I have never been troubled in the least with either. I noticed three seasons ago some few black aphis on the terminals of some of the vines, which I cut off and threw into the lake, since which I have seen nothing of these little black foes.

6th. The straw is an excellent gardener as well as winter protector, for if judiciously distributed it not only keeps the weeds from growing, but it keeps the ground "as mellow as an ash heap." It invites the bugs and worms (incapable of boring the grape roots) to the surface of the ground, it always being moist and soft; that surface is continually pulverized and vitalized by these industrious denizens of the soil. The straw not only accomplishes irrigation but the finest cultivation, enabling the long fibrous roots and rootlets to secure their proper nourishment on the surface, in the richest and mellowest soil, without compelling them to penetrate hard sub soil in search of nourishment, and to avoid the burning effect of the sun's rays. The straw mulching secures plenty of heat and abundance of moisture, which stimulate the ripening of the wood and fruit to a remarkable degree.

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7th. Straw contains considerable ammonia, which has a great affinity for nitrogen, and collects that useful gas from the atmosphere and retains it for the diffusion of sugar and the nitrates essential to the value of the fruit, etc. And besides, the woody matter of straw returns to vegetable mould, thus adding vastly to the development and strength of the cane, etc. Phosphate and carbonate of lime are also deposited and retained in a degree, adding greatly to rapid growth and early maturity.

I have now some 1,500 vines, and the weeding and cultivating have scarcely cost me a dollar a year. I have had some weeds to contend with, but it was wholly owing to a defective distribution of straw. I use from eight to ten loads each fall, covering the whole ground to the depth of six inches. In the spring, as soon as the lilac leaves have half their growth, the vines should be uncovered and tied to the trellis, and leave nature and summer pruning to do the rest.

In 1869—the first bearing year of the 1,000 Concords I had planted in 1868—the vines were literally covered with fruit; very few vines had less than 10 pounds, while some of them contained not less than thirty pounds. The branches were exceedingly well formed, with very large, plump berries. I could fill my bushel basket with pound punches. I estimated that on the whole piece (about three-quarters of an acre) there could not be less than 10,000 ponnds.

The crop, for the first one, being so intensely heavy, I did not expect to raise many the present year; but, although I was absent the whole summer, and did not trim them at all, but permitted them to "run at large," I could not perceive much difference from the bountiful yield of the previous season. I think the amount was somewhat less, but they were of better quality and flavor, and ripened a month earlier than last season.

I had never known straw to be used before, as a cover, a mulch or a cultivator, but for ten years I have used it with most excellent success. I believe it saves one half the otherwise necessary labor in this climate, producing earlier and better fruit. Hens should not be permitted to range in the vintage, for they will not only destroy much fruit, by promiscuously picking open the berries, but will so scratch and scatter the straw as to render it useless for the purpose intended. My neighbors' hens leave me ample margin for a treatise on this subject, not of the most pious order, for they invariably scratched away the straw from the roots of the vines to obtain the worms that worked on the surface of the soil, making much trouble to replace the mulching.

As to the kinds of grape to cultivate, much may be said, but in my opinion, very little ought to be said. If *dollars* are the sole object, the Concord is the *only* kind that should be encouraged; but if the amateur desires a variety for table use, without regard to the market value, then he may add Delaware, for its excellent flavor and fascinating vinous qualities; Hartford Prolific for its early ripening; Diana for its delicious flavor, and Northern Muscadine to give away to importunate friends and "relations," that are always so glad to see him, just at the grape season.

The Herbemont, which is said to be the best wine grape yet discovered east of the Rocky mountains, is not hardy enough for this climate, nor are our seasons of sufficient length to mature it. The Union Village or Shaker, the Anna, and several

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other new varieties are being recommended for popular favor, but as yet they have not been *proven* as the best to adapt to our Wisconsin soil and climate.

The grape is one of the most fickle of all the vegetable tribes. A vine of a certain variety may do splendidly in a certain locality, and yet entirely fail in another locality not a mile distant. All the varieties are more or less fickle, but some of them are peculiarly so, and hence we find one neighbor commending while another condemns. The Concord is less liable to fickleness than any variety yet known, that may be considered worthy of cultivation. It is a rich juicy fruit and more prolific than any variety capable of enduring our climate. Its wine ranks in the market equal to the Catawba, and is only excelled in price by the Herbemont and Delaware.

There is a choice in location. A south or southeast slope is to be preferred, though almost any slope will do, for it is said that the Concord will mature wherever a hill of corn will ripen. A light sandy soil is the best, though any soil will answer that does not permit water to stand on the roots.

In the latitude of Ohio, Missouri, etc., where the atmosphere holds considerable vapor, *idium*, or mildew commits terrible ravages among the fruit. But this enemy has seldom made its appearance in the dry and arid atmosphere of Wisconsin. In the former latitude it is estimated that a good crop could not be relied on oftener than once in four years, while with us, we have scarcely failed, where the vines have been protected in winter, to realize a good crop every year for the last twenty years.

Thus the latitude of Ohio, etc., has the advantage of us, in the protection of vines in the winter without covering, but we more than make it up by a sure crop in summer, and with the trouble of winter protection I am confident we can not only grow a good crop of grapes every year, and in every county of the state, where corn can mature, but that it would prove vastly more remunerative and less exhaustive to the soil than any other crops. Grapes do not exhaust soils, and will do well on moderately poor soils, for the reason that this fruit's sustenance is derived, principally from the nitrogen of the atmosphere. Some vegetation evolve more nitrogen than others, and as nitrogen constitutes near four-fifths of the whole volume of atmosphere, and as it has (when distilled through vegetable lungs or leaves), a great affinity for ammonia and the phosphates, it enables its vegetable chemical agents to feed on atmospheric diet, and with due warmth and moisture the vine requires but very little from the soil.

Some of the European grapes seem to combine the exact proportion of sugar and acid to make good wine, but our native grapes contain too much acid, and should receive a proper addition of sugar when expressed into wine.

The trade winds and ocean currents through the Mediterranean sea, from the tropical Atlantic, produce a condition of atmosphere very favorable to the European vine in their course. So of the California vines that are under the influence of similar air currents from the tropical Pacific. The interior of our continent is debarred these advantages by the high range of mountains that lie between us and the Pacific ocean.

But, although we are deprived of the proper climate for grape culture and wine

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making, we can make amends to some extent by studying the chemistry of the grape and applying artificially what nature fails to supply.

Our grape crops, to be permanently valuable, should be made into wine, because we have not a market for the fruit, and cannot keep it for exportation. But the wine will keep and grow more valuable by age, and I regard the wine culture as among the most prominent features of the future of Wisconsin.

I purposely refrain from giving any directions as to trimming the vines. The best directions would not answer, perhaps, for more than half a dozen localities, as the vine is too fickle to be subject to any one set of rules. Experience and good judgment must be the guide in all cases.

After a short discussion on the culture of grapes, most of the persons being disposed to disagree with or doubt the propriety of the manner of culture adopted and described by Mr. CARPENTER, Mr. H. H. MCAFEE, then of Freeport, Illinois, now of the University Farm, Madison, Wisconsin, was called for, and he read the following paper on the

CHICKASAW PLUM.

At the late meeting of the Northern Illinois Horticultural Society at Rockford, the committee on the Chickasaw Plum, of which I was a member, made a report thereon, in which they traced the history of its origin, and agreed upon a name for the same. A class of plums derived from the *prunus chickasa*, and known under various names, as Miner, Townsend, Isbell, Peach, Chickasaw, etc., is coming into general cultivation in the states of Illinois, Wisconsin, Minnesota, Iowa and Nebraska, and wherever tried are giving general satisfaction, on account of the following points of excellence: 1st. The tree is the most hardy and long lived of any plum tree in the localities named; 2d. Its fruitage is abundant and continuous; 3d. The tree and fruit is less subject to injury by insects than is any other plum—the curculio larvæ being extremely rare, and the gouger not common enough to injure the crop; 4th. The quality of the fruit, of the best varieties, is good, and is everywhere popular, and meets with ready sale, at good prices; 5th. For profit to the planter, these plums are unexcelled.

The history, so far as now known, of the oldest stock of these plums planted within the territory named above, is as follows: In 1832, a man named Knight brought from southern Ohio, by boat to Galena, a stock of small trees, which he disposed of to the late Major Hinckley and others. The trees planted by Major Hinckley are still in full vigor, and bearing, and may be seen at his old place near Galena. The year following the first importation, Knight brought a second lot of trees, and planted most of them on Mr. George Townsend's farm, in the eastern part of Joe Davies county. From these stocks the most if not all of the trees disseminated under the various names mentioned above have sprung; and as Major Hinckley was largely instrumental in securing the general planting of the plum, generously giving them away to his neighbors and friends, and as he grew them

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first in the west, it was decided by that society, that the name "Hinckley" could be, with more propriety than any other, applied to all of these plums springing from Knight's importation, except the seedlings. The name "Miner," applied by Mr. Barber, at a late date, in honor of the man from whom he derived his trees, is not defensible on any rules of pomological nomenclature; and the other names mentioned above are in a like manner objectionable.

As this class of plums are variable in their seedlings, they must be propagated by extension, and not from seed, to secure satisfactory results; the seedlings of the wild Chickasaw frequently produce a fruit of small size. The Hinckley plum is so unlike these seedlings, that it deserves a special designation, referring to its known origin, and under which it may be generally distinguished from its wild progenitor. So many varieties are in cultivation, and many of them of poor quality, owing to the planting of seedlings, that it is most desirable that all nurserymen should supply themselves with genuine stock, and discard all others; and should hereafter propagate by root cuttings, or in some other way, so that they may be sure they have the true variety for sale.

At the conclusion of this paper, Mr. STICKNEY remarked that in his estimation there was much force in the action of the Illinois society, and that this society would do well to imitate their example in calling this plum by the same name. If he were not occupying the chair, he would move that this be called the "Hinckley." Thereupon, on motion of Mr. KELLOGG, the name "Hinckley" was unanimously adopted, as that by which this society would recognize the plum heretofore known in this state as the "Miner."

A TENDER ROOT STOCK.

Prof. DANIELLS of the University exhibited a section of a young apple tree that had been planted in the grounds of the University, and which had died. On removing the tree from the ground, he had observed a spongy protuberance around the point where the graft and stock were united, near the surface of the ground, and it appeared that the upward sap had supported the tree for a term, and the return sap under the bark had met the dead bark, and as it could go no farther, it had attempted to heal over the spot, or to form new roots to support the tree in the future, but had failed after a severe struggle for existence. The top of the tree was of a hardy variety, but the root had been too tender to withstand the effects of the winter.

Some one suggested that this tree may have been lost by reason of too deep planting, so that the root had died from that cause; but the Professor replied that though he knew of instances where trees had perished from too deep planting, more were lost in this country from too shallow planting, especially where they were on tender stocks that would winter-kill.

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Mr. GREENMAN suggested that this may have been caused by the October freeze of the year before. To that the Professor replied that he could not see how that could produce this effect, just at this point, and not above nor below.

Mr. PEFFER inquired if there might not be a mechanical effect of the frost at this point that had caused this action.

Mr. WATERS said he had found among his trees a scale of ice one-sixteenth of an inch in thickness between the bark and the wood, near the ground, in the winter, that had burst the bark at that point, as well as raised it from the tree, and caused its death, or made the dead patch on the side. His attention was called to this point by seeing a leak, as of sap, at the point, on a warm day. He practiced banking up or mulching to prevent injury in such instances.

FRUIT LIST.

Mr. PLUMB, from the committee on fruits, made a partial report:

APPLES.—*List of five varieties to which no objection should be made.*—The same as last year, viz: Red Astrachan, Duchess of Oldenburg, Fameuse, Tallman's Sweet, and Golden Russet.

A lively discussion arose upon the identity of the name "Golden Russet." What apple was meant? And it was decided that the apple described by WARDER, was the one intended. His description is here given:

"ENGLISH GOLDEN, (*Russet Golden of Barry*).—Among the Russets there has been much confusion, which it is very difficult to clear up. The apple about to be described came to the west from the nurseries about Rochester; a very superior variety to many others that resemble it, and may be distinguished by the palate, or by the character of the twigs. Tree thrifty, vigorous, spreading, productive, a rather early bearer; shoots slender, olive, speckled. Fruit medium, round; large ones are oblate, often cylindrical, sometimes inclined, regular; surface greenish yellow, covered with thick russet; dots minute, white, scattered; basin regular, deep, leather-cracked; eye small, closed; cavity wide, regular, closed, clasping; seeds small, flat; flesh greenish yellow, breaking, granular, juicy; flavor sub-acid; quality good to best; use, table, kitchen; season, January, February. A choice fruit, succeeds well in parts of Kentucky."

The first list being thus retained and defined,

Second list of ten varieties, of hardy trees, and worthy of general culture, was taken up, viz: Sops of Wine, Fall Stripe, St. Lawrence, Fall Orange, Plumb's Cider, Blue Pearmain, Seek-no-further, Ben Davis, Willow, and Utter.

Mr. FINDLEYSON desired to place the Utter instead of the Alexander, in this list, and moved accordingly. The Utter was a favorite fruit with him, and he could not well do without it.

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Mr. PLUMB said that the Utter was a profitable tree for this latitude and farther south, but he doubted if it would do well farther north, and he could not recommend it for that region.

Mr. BARTHOLOMEW had fifteen trees, and had never seen an apple on them.

Professor DANIELLS said the Utter bore well on the University grounds, and he was much pleased with it.

Mr. GOULD was pleased with the Alexander; it was hardy and a good bearer, and a good apple for its season and use as a cooking apple. He had heard it objected to, that we did not need it, having enough of early fall apples better than this. That was no objection in his mind, as he believed we had not too many fall apples, nor were we likely to have them.

Mr. STICKNEY thought the Utter paid better than any other tree for a market apple. He knew one orchard that had become famous for the production of this variety of apples.

Mr. PLUMB said if the Alexander was to be struck out, and another substituted, he should prefer the Northern Spy to any ouher.

Mr. STILLSON must join issue against the Northern Spy; he had trees planted out fifteen years ago, and they were nearly worthless, and he only regretted that they were not dead, so that he could fill their places with other and better trees. The Fameuse, only a few years planted out, will bear two or three barrels each; that was a much better tree. The Perry Russet had been highly commended, but his trees had dropped their fruit badly. The Utter did well and bore well; he only feared there was danger of produeing them in excess, till farther trials had been had. It shed its leaves in September, and there was danger that the buds might start, and so the tree prove tender.

Mr. TUTTLE said the Northern Spy was an exceedingly discouraging apple to grow. The tree must be at least fifteen years out to commence bearing, and then it commences to die. He had no faith in it. A slight injury to the tree spread all over it, and it does not seem to heal up as do most other trees.

The motion to reject the Alexander and substitute the Utter prevailed. Some discussion occurred on retaining the Blue Pearmain, the Willow and the Seek-no-further; but they were retained. A motion was made to substitute the Ben Davis for the Perry Russet, which had been reported by the commiftee.

Mr. ROBERTS spoke in the highest terms of the Ben Davis, and said that the tree had stood through trials and tribulations, such as determined its rank among the hardiest.

Mr. KELLOGG said the tree did well with him, on his rich prairie.

Mr. GREENMAN said a tree had been growing at Milton for twenty years, and it was still vigorous, and a good bearer.

Mr. WILLARD, who was a representative of a Rochester nursery, and had come here to learn what trees were required in this market, and what were hardy and what not, as well as to ascertain the cause of the failure of certain trees in this

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state, said, in northern New York and Canada the Ben Davis does remarkably well, and had been cultivated for sufficient length of time to test its hardiness.

Mr. FLINT had cultivated this apple in Green Lake county, on light soil, and thinks it is equal to any of those placed in the first list as a hardy tree; it bore early and in large quantities. As a cooking apple it was an excellent one, but as a desert it did not rank high, though it was a long keeper.

Mr. ROBERTS had it planted on his most exposed situation, and it does the best of all its fellows. So far as he knew, and he could find no contradictory evidence, it was first received by him from the Rochester nurseries, and all had lived and borne good crops since the second year after planting, and it was the first selected for use in his family.

Judge KNAPP moved to append to this list the following: "That this list is not recommended as perfectly hardy north of La Crosse, Adams, Outagamie and Brown counties, and the peninsula of Green Bay."

Which was rejected, thus leaving the list unrestricted by northern limits.

Commercial List.—The committee also reported a list of apples to be grown for commercial purposes, viz: Red Astrachan, Haas, Fameuse, Ben Davis, Utter's or Cooper and Walbridge, [Coggswell's Pearmain]. Objection being made to this last,

Mr. TUTTLE, in defending it, said it was one of the very best he knew of, for its fruitfulness and hardy character. The quality of the fruit spoke for itself, and was its own recommendation. He looked upon it as no ways inferior to the Fameuse.

Mr. STICKNEY could confirm all that had been said by Mr. TUTTLE; and purposed to prove its quality by a general tasting committee of the whole.

All agreed that this test was satisfactory, and established the high reputation of the quality of the fruit; and the whole resulted in the adoption of a resolution, offered by Mr. WILLEY, as follows, viz:

Resolved, That we recommend the Walbridge for further trial for its hardiness, productiveness and long keeping qualities.

List for Family Use.—The committee also recommended the following for use in the family: Sweet June, Sweet Pear, Bailey's Sweet. Which was adopted without dissent.

Mr. PLUMB also presented for the same purpose, the following as one of great promise in the future, viz: Fall-Wine, Bethlemite, and Cable Gilliflower.

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Mr. PLUMB offered the following, which was adopted:

Resolved, That our membors are hereby requested to observe the orchards, which are planted upon sandy lands, and mark and learn the varieties which prove successful there.

STRAWBERRIES.—The committee recommend the Wilson for market value and profit, and the Green Prolific as a hardy and very productive variety.

RASPBERRIES.—The committee recommend the following: Doolittle, Mammoth Cluster, and Davidson's Thornless, for general culture among the caps; also the Clark and Philadelphia among the red berries, for near market and domestic use. The Clark was the best flavored.

The lists for strawberries and raspberries were both approved by the society.

A recess was then taken to enable the members of the society to place their fruits on exhibition, arranged in proper order for a public view this evening; after which, the society adjourned to 7½ P. M.

7½ O'CLOCK, P. M.

The meeting was called to order, J. S. STICKNEY in the chair; when according to the programme, Hon. SAMUEL D. HASTINGS of Madison, was introduced and read the following paper

ON DOMESTIC WINE AND TEMPERANCE.

Mr. President and Gentlemen of the State Horticultural Society:

I understand that the ultimate object of your association is to promote the good of its members, and as far as possible to advance the prosperity of the community at large. Whatever will tend to secure these results is a matter of interest to every good citizen. Every patriot, every philanthropist, every christian must regret the prevalence of intemperance in our land. However much they may differ on the question of measures, on the question of the necessity of entire abstinence from all intoxicating beverages, and on the propriety of prohibitory legislation, all agree in deprecating the crime, poverty and wretchedness which result from the excessive use of these beverages, and will willingly unite to favor any measure that they are satisfied will tend to remove these manifold evils and increase the sobriety of the people. The question which I have been invited to discuss before you this evening, is one of great importance, and one which it is eminently proper should be discussed by this association. It would be uncharitable to suppose that there was a single individual connected with this association who is not a friend of temperance, and who would not cordially exert his influence in favor of any measure that would promote the best good of the community.

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I am well aware, that the views I am about to present will not harmonize with those of some, perhaps many of those who hear me; that among those who will differ from me will be found men at whose feet I should consider it a privilege to sit and learn on almost any subject.

I can only say that the views I shall express are the conclusions I have reached, after a patient and careful consideration of the question, and I ask that you will give me a candid, unprejudiced hearing, and allow the facts and considerations I shall present the weight they are legitimately entitled to.

Would the general cultivation of the grape, to be converted into wine, be advantageous to the cause of temperance? The wine thus manufactured will contain alcohol—the same kind of alcohol as that contained in rum, gin, whisky and brandy, and if used in sufficient quantities will produce the same results as flow from the use of the stronger liquors. If a love for the pure wine be once fully established, the peculiar appetite which is created by the habitual use of intoxicating drinks will be formed, and its demands will be met, either by greatly increased quantities of the wine, so as to secure the needed alcoholic stimulus, or by substituting in the place of the wine, the stronger liquors. The intoxicating principles in all these beverages is alcoholic, and disguise it as we may, it is ever the same destructive agency; and make it as palatable and as attractive as we may, in the guise of pure wine, still, at the last, "it biteth like a serpent, and stingeth like an adder." If domestic wines were generally manufactured, one result would be greatly to increase the number of the consumers of alcoholic beverages. Those who now use the stronger liquors would still continue their use. No whisky or brandy drinker would give up these drinks and confine himself to wine. The tendency is not to go from the stronger to the weaker, but from the weaker to the stronger. Thousands who have never drank, and who without the general introduction of domestic wines, never would, will be led to drink these wines from their supposed harmless character, and in many cases, habits of intemperance will be formed, that will be as fatal in their results as though formed by drinking whisky or brandy. And even though the use of these wines should not lead to the use of stronger liquors, the quantity used will in many cases be gradually increased until the amount of alcohol taken into the system will be as large as that consumed by whisky and brandy drinkers, and the result will be equally injurious.

Intemperance results from the use of alcoholic beverages. It is of comparatively little moment by what name these drinks are called. The important question is, do they contain alcohol? Are they intoxicating? If so, intemperance will follow their general use. It makes but little difference in what form the alcohol is used, the results are essentially the same. This fact, however, should be constantly borne in mind, that the more attractive the form in which the temptation is presented, the greater will be the number who will yield to its seductive power, and to make any alcoholic beverage attractive and place it within the reach of the multitude, is but to make it easy for thousands to commence habits of intoxication, who otherwise would be saved from their evil influence.

"But," says the advocate of the general introduction of wine, "while your theory may appear to be correct, does not the almost entire absence of intemperance in

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wine producing countries, prove it to be unsound? It will not be denied that many witnesses can be summoned who will testify that in traveling through France and Italy and other wine producing countries, they saw little or no drunkenness." While the honesty of these witnesses is not questioned, there is an abundance of positive testimony of an opposite character, that leads to different conclusions.

The testimony of one or two witnesses who saw a particular transaction with their own eyes will be conclusive that the transaction actually occurred, and it will not be at all invalidated by the testimony of a thousand witnesses who did not see it, not being at hand at the time of the occurrence, or, if at hand, having their attention otherwise engaged. An individual might spend an entire week, or longer, in the city of New York, without seeing a single person who showed evidence of intoxication; would he therefore be justified in saying that there was no intemperance in that great city with its tens of thousands of drinking saloons? There are to-day in the United States not less than five hundred thousand confirmed drunkards, and yet an individual might travel on our public conveyances, from one end of the land to the other, without coming in actual contact with a single one of these victims of the intoxicating cup; would he therefore be warranted in saying that this vast army of drunkards had no existence?

While there may be hundreds, and perhaps thousands, who have never witnessed the evidence of the existence of drunkenness while traveling through wine producing countries, there are an abundance of witnesses of the highest character who have seen these evidences, and whose testimony is conclusive as to their existence. Is it true that wine-producing countries are free from the evils of intemperance?

The testimony of the Rev. E. S. Lacy, formerly of San Francisco, is clear, explicit and to the point. In a letter dated at Paris, May 5, 1866, and published in the *Pacific* at San Francisco, June 30, 1866, Mr. Lacy says: "I wish now to tell you what I have observed in wine-growing countries, and to give you the result of many inquiries concerning the drinking habits of the people. The testimony of travelers in Europe, as far as I ever heard, was to the effect that intoxication was very little known in wine-producing districts, and that if wines were only cheap and unadulterated in America, the vices of intemperance would be greatly abated, if not entirely removed. I was so well convinced by such unanimous testimony, that I regarded the introduction of the wine-culture in California, and its general increase, as a harbinger of public good and as a kind of assurance of general morality.

"I have just spent six months in a country place in Switzerland, where the people do nothing but work vineyards; where wine is cheap and pure, and far more the beverage of the laboring classes than water; where none think of making a dinner without a bottle of wine; where all the scenery about is of the most elevating and ennobling character. Here, more intoxication was obvious than in any other place it was ever my lot to live in. The common people, passing to and fro, with loads of hay or wood, or to and from their markets, would become intoxicated before reaching home. The wine-shops (or cafes) were frequented at all hours, and at almost any time of the day might be found full of men. On holidays and festal occasions, you might suppose all the male population drunk, so great are the numbers in this deranged or beastly condition. On Sunday afternoon, loads of young men go shouting along the streets.

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"Intelligent Germans informed me that this is the great social evil of their country, a place where wine, if not very cheap, is never adulterated, and where great quantities of it are drank."

In regard to France, testimony drifts in a similar direction. Paster Fisch, the President of the Protestent Evangelical Union, stated in a public address, while enumerating the difficulties lying in the way of the Gospel in France, made most prominent the habit of excessive drinking, and described the prevalent intoxication among the peasantry as something fearful. "Around every large city one sees much intemperance; but I have never observed more in any metropolis than in Paris. Therefore, in your warfare with vice, do not be deceived by the cry, that wine is harmless, or that the sobriety of a country is improved by flowing wine-presses on every ranch; but remember that there is positive testimony in support of the strong probabilities against such assertions."

This testimony of Mr. Lacy is worthy of the most careful consideration, as he went to Europe an advocate of the wine-culture in California, and expecting there to find the evidence that its general extension throughout his adopted state, would result in great good to the people. From the large amount of testimony at hand of a similar character to that of Mr. Lacy's, it is difficult to make a selection. A few brief extracts must suffice.

The Count de Montalembert said in his place in the French National Assembly, 1850: "Where there is a wine-shop, there are the elements of *disease*, and the frightful source of all that is at enmity with the interests of the workmen."

Smollett, the historian and novelist, found a hundred years since, in the course of his travels, "that all wine-districts are poor, and the French peasantry were always more healthy when there was a scarcity of wine."

J. Fennimore Cooper, the American novelist, said: "I came to Europe under the impression that there was more drunkenness among us than in any other country, England, perhaps, excepted. *A residence of six months in Paris changed my views entirely.*"

Henry Greenough, the eminent American sculptor, in a letter to E. C. Delevan, in 1858, said: "Many of the more thinking and prudent Italians abstain from the use of wine; several of the most eminent of the medical men are notoriously opposed to its use and declare it a poison. When I assure you that one-fifth, and sometimes one-fourth, of the earnings of the laborers are expended in wine, you may form some idea of its probable influence on their health and thrift."

In a letter to the Rev. Dr. Nott, written at Paris, May 1, 1860, by E. C. Delevan, are described some most extraordinary scenes which came under Mr. Delevan's own observation. In speaking of an opportunity afforded him of witnessing the debasing effects of wine drinking in Paris, he says:

"I visited one wine-shop with my guide last evening (Monday); I saw the proprietor, and told him I was curious to see his establishment, he was very polite, and sent a person round with us.

"At the lowest, five hundred persons were already assembled, and the people were flocking there in droves—men, women and children, whole families, young girls alone, boys alone—taking their seats at tables; a mother with an infant on her arms came reeling up one of the passages.

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"It was an immense establishment, occupying three sides of a square, three or four stories high, and filling rapidly with wine-votaries. I saw hundreds in a state of intoxication, to a greater or less degree. All, or nearly so, had wine before them.

"The attendant stated to me, that the day before (Sunday), at least two thousand visited the establishment, and that the average consumption of wine was two thousand bottles per day.

"This place was considered a rather respectable wine-shop. My guide then took me to another establishment, not ten minutes ride from the Emperor's palace.

"The scene here beggared description. I found myself in a narrow lane, filled with men and women of the lowest grade. The first object which met my sight was a man dragging another out of the den by the hair, into the lane. Then commenced a most inhuman fight; at least fifty people were at hand, but not a soul attempted to part the combatants. At last one fell against the curb-stone; I thought him dead, but he soon got up, and again at it they went.

"I then entered into the outer room of the establishment, which was packed full of the most degraded human beings I ever beheld, drinking wine and talking in loud voices. * * * I was informed by the cabman that in the establishment last visited, he had seen from eighty to one hundred and fifty lying drunk at a time; that they frequently drank to beastly drunkenness, and remained until the fumes passed off, for if found drunk in the streets the police take them in charge."

Mr. Delevan spent the winter of 1868 in France, and from a letter of his to Hon. Wm. E. Dodge, dated at Paris, February 20th, 1868, I make a brief extract. Says Mr. Delevan: "Everybody drinks here, and I have never found the individual, male or female, who drank wine, that did not defend its use. When I was here thirty years since, Louis Phillipe told me that wine was the curse of France; that he wished every grape vine destroyed, except for the production of food; that total abstinence was the only true temperance. * * I am here again after the lapse of so many years, and in place of witnessing any abatement of the evil, I think it is on the increase, especially in the use of distilled spirits, greatly stimulated I believe, by the almost universal use of tobacco.

"The main object I have in view in collecting these statistics, has been to dissuade my countrymen from using any section of our country for the production of wine. It is my belief that the use of our soil for such a purpose would be an unmitigated evil, without a single redeeming benefit."

Dr. Holland, who has recently visited Switzerland and other wine-producing countries, gives the results of his experience in the Springfield *Republican*. This important testimony of one so perfectly competent to give evidence in the matter, will be read with interest, and should settle the question of the "utility of domestic wine and its power to diminish drunkenness." We quote as follows:

"There is no question that the people would be better, healthier, happier, and much more prosperous, if there were not a vineyard in the canton. We have all been told in America, and I fully believed it, that if a people could be supplied with a cheap wine, they would not get drunk—that the natural desire for some sort of stimulant would be gratified in a way that would be not only harmless to morals,

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but conducive to health. I am thoroughly undeceived. The people drink their cheap white wine here to drunkenness. A boozier set than hang around the multitudinous cafes here it would be hard to find in any American city, even where they enjoy the license of the Maine law. The grand difference in the drunkenness of an American and Swiss city is found in the fact that the man who has wine in him is good-natured, and the man who is equally charged with whisky is a demon. There is no murdering, no fighting, no wrangling. The excitement is worked off in singing, shouting, and all sorts of insane jabber. Then the steady old white wine topers come into blossom. If you can imagine a cauliflower of the color of the ordinary red cabbage, you can achieve a very adequate conception of faces that are not uncommon in all this wine-growing region. So this question is settled in my mind, cheap wine is not the cure of intemperance. The people here are just as intemperate as they are in America, and, what is more, there is no public sentiment that checks intemperance in the least. The wine is fed freely to children, and by all classes is regarded as a perfectly legitimate drink. Failing to find the solution of the temperance question in the Maine law, failing to perceive it in the various modes and movements of reform, I, with many others, have looked with hope to find it in a cheap and comparatively harmless wine; but for one, I can look in this direction hopefully no longer. I firmly believe that the wines of Switzerland are of no use except to keep out whisky, and that the advantages of the wine over the whisky are not very obvious. It is the testimony of the best men in Switzerland—those who have the highest good of the people at heart—that the increased growth of the grape has been steadily and correspondingly attended by the increase of drunkenness. They lament the planting of a new vineyard as we, at home, regret the opening of a new grog-shop. They expect no good of it to anybody. They know, and deeply feel, that the whole wine-producing enterprise is charged with degradation for their country.

"I was told, before leaving America, that I should be obliged to drink wine or beer in Europe. One good clerical friend assured me that I could not get through Great Britain safely without drinking beer. As I did not like beer, the prospect was not pleasant. Indeed, I felt about as badly discouraged as Brigham Young declares he did when the duty of polygamy was made known to him by heavenly revelation. Well, I did not drink beer, and I got through Great Britain very comfortably indeed. None of my party drank beer, and all survived not only, but improved, upon cold water—the terribly poisonous cold water of Great Britain! In Paris, I took the ordinary red wine. In Switzerland, I continued it with great moderation, until I was thoroughly satisfied that every glass I drank damaged not only my health, but comfort. Now, I drink no wine at all; and that member of my party who has drank nothing but water from the time of leaving America, has experienced not one particle of inconvenience from the practice. We have all concluded that wine-drinking in Europe is just as unnecessary as it is in America, and that there never was a greater mistake than the supposition that alcohol in any form is necessary as a daily beverage for any man or woman."

It may, perhaps, be suggested by some, that admitting the experiment has not worked well in the wine-producing countries of Europe and Asia, yet owing to the

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difference in the climate, and in the character and habits of the people, this fact is not conclusive evidence that it would not work well in this country.

To this it may be replied, that the experiment has already been tried in one of the United States, California, long enough to prove most conclusively that the results there are no more favorable than they have been shown to be in the wine-growing countries of Europe.

Joseph Weed, a prominent and reliable citizen of San Francisco, in an article published in the "National Temperance Advocate," thus testifies to the ruinous effects of wine-making in the Golden State: "There is probably not a village in the state where wine has been made to any extent, that has not witnessed the gradual fall of individuals and families to intemperance and beggary. Among those engaged in this occupation very little is said, and less published on this subject; yet it is of general notoriety, and indisputably true. Not a few church members, as well as others, are said to have fallen from this cause."

A State Convention of the friends of temperance, held at San Francisco October, 1868, adopted the following resolution:

Resolved, That we consider the project of banishing intemperance by introducing the general use of wine as a beverage, to be a delusion and a snare. Even were it possible to exclude ardent spirits, and substitute the fermented juice of the grape, there is no reason to look for any other results than followed in the ages of antiquity, when wine was the only intoxicating beverage, and when the drunkenness of wine-drinking nations provoked the wrath of God, and the denunciations of Holy Writ."

The editor of the *Pacific*, a newspaper of high character, published at San Francisco, gives the following testimony in his paper, after having traveled extensively through the state. "But through some parts of these mountains, as well as in the valleys, there is arising a species of production fraught with dire evil to the producers and the country; it is that of wine-making. Already wine has become as cheap as milk, and is as freely drank, till many once sober men, are growing habitually intoxicated. In one wine-growing neighborhood we are told that young girls, seventeen years of age, reeled through the streets under the intoxication of pure California wine. Men once of worth, now are, through wine, lost to society, and becoming a fear and disgrace to their families. One leading man enumerated to us five of his acquaintances who, once noble men, are now to be called drunkards, through wine. The production of this article, now fearfully on the increase, must prove a curse to the whole land if persevered in"

A large convention of Congregational ministers and delegates from all sections of the State, held at San Francisco, with great unanimity denounced the wine manufacture as destructive of the moral, industrial, political and religious interests of the commonwealth. The Rev. Dr. Stone, a member of the convention, in speaking of this action, says: "The convention struck a strong blow for the temperance cause, declaring in unequivocal terms against the manufacture and use of wine. * * I had entertained a sort of hope that the manufacture of pure wines and their introduction into general use, would crowd out the gross strong liquors, and diminish intemperance. I am fully convinced that this hope was groundless and

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delusive. * * It appears that in the wine growing districts, intemperance is on the increase, extending even to the youth of both sexes."

W. N. Mills, Esq., the editor of the *Rescue*, published at Sacramento, a gentleman personally known to me, and known to be one of the most intelligent and reliable men in the state, says in his paper: "The truth is patent to all now, that drunkenness has followed in the wake of this enterprise, and in vindication of the past warnings of temperance men, we point to the wine growing counties of the state, and in the drunkenness, thriftlessness and poverty of the people, unanswerable argument against foisting this deadly blight upon the true industrial interests of the commonwealth. A few years of actual experiment here fully demonstrated the truth of the allegation as to the effect of wine producing, and the unwelcome fact is now before us, that it makes drunkards and paupers of the people of California. We challenge a refutation of these statements."

In another article the same gentleman says: "There are a great many people who make the argument that wine drinking will prove a cure for the vice of drunkenness, and they talk with such seriousness, that we are almost compelled to believe them honest in the doctrine they enunciate. But we would ask them to note this:—That every vineyard in the state is a drunkery; that men who a few years ago, perhaps were strenuous temperance people, or at least abstained from drink, are now, that they have wine producing vineyards, rapidly becoming drunkards, and that Los Angelos and Sonoma counties especially, and the other wine producing counties proportionably, are noted for the extent of this vice, just in proportion to the number of gallons of wine they produce. These are the facts of the case as we know them from personal observation."

At a session of the Congregational General Association of Vermont, held within a year or two, the Rev. Dr. Dwinel of Sacramento, gave an interesting account of the wines of California as an obstacle to missionary success. He said, "in some quarters wine is as cheap as milk, and very intoxicating. As much as nineteen per cent. of alcohol in some cases is found in California wine, and people get drunk on it as quick as on brandy, which is often reduced in strength before it is drank." In private conversation Dr. Dwinel confirmed the view that the usual effects of intoxicating drinks, follow the use of California wine, and that it is no evangel of temperance, but the fruitful cause of intemperance, and all its attendant evils of gambling, Sabbath desecration, irreligion vice and crime.

Do not the facts presented fully sustain the correctness of the position taken at the commencement of this article?

One fact more: Notwithstanding the immense quantity of wine drank in California, statistics show that there are more of the stronger liquors used in proportion to the population than in any other state in the Union. The city of San Francisco contains more liquor saloons in proportion to the population than any city in the land. What a comment are these facts upon the doctrine that the general use of pure wine will remove the evils of intemperance!

At the conclusion of this address by Mr. HASTINGS, Mr. HOILE remarked that he had noticed Governor FAIRCHILD was present,

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and desired, as he presumed that others did, to hear from him. The Governor then rose and remarked that he indorsed the conclusions arrived at in the address, and yet he hoped never to see such a state of society prevail here, as had been depicted of the wine-growing countries. He would take this occasion to say, that he felt a strong interest in the labors of this society for the benefits it had conferred on him in common with the other citizens of the state. For that work, and for the end and aims it had in hand, as one of the good institutions of the state, this society was worthy of the patronage of the public in the future; as in the past, he desired to be considered as one of its friends and helpers.

Mr. KELLOGG then proposed the following, which was adopted:

Resolved, That we, as a society, fully endorse the statements of the address, to which we have just listened; and that we hereby instruct our committee, who have our premium list under consideration, to offer no premium for wines.

Mr. PLUMB said that with this action, the question might be asked, what shall we do with our wines, if we are not to make wine of their fruit; shall we dig them up? He would answer, by no means. The fruit can be as readily preserved as any other fruit. There was no more trouble, in preserving grapes than any of the other small fruits, and in some cases even less, as he knew from experience; and he had found them both economical and pleasant for future use in the preserved state.

Mr. STICKNEY hoped no one would be discouraged in raising grapes till they become so plentiful that they will not command five cents a pound, for even below that price they were a more profitable crop than grain.

GRAPE LIST.

The committee on fruits had reported: for general culture, Delaware and Concord; also Rogers' Hybrids Nos. 3, 4, 9, 15, 19, 33, 43 and Salem. This latter is highly commended. The Hartford and Creveling may be grown in limited quantities for early use. From the limited experience with it, in this state, they could only recommend the Eunelan for trial. The Janesville is winning commendations from many sources, as very early and hardy, of medium quality; better than the Hartford for an early variety for the northwest.

The discussion of this list seemed to rise here without any motion, on the remarks of Mr. TUTTLE, who said he could recommend his own five acres of grape vines, as a profitable piece of ground; and he had no idea that he should ever be called on to dig up any portion of it, though he made no wine; he found a market for more fruit than he could raise. He had some new sorts that he was experimenting with, and he had tried nearly all the best of the Rogers. He esteemed the Concord least of all he possessed, because it would not carry to market; the berries burst as soon as they ripen, sometimes on the vines, and he could not keep

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them any length of time. That was not the case with the Delaware; that would keep, and it would carry to market; that and some of the Rogers would keep, and bore about the same relations to the Concord, and some of the others, that the winter apples do to the early ones; they would keep all winter, while the Concords would not keep ten days. The Rogers No. 9 ripened August 20th, and was good and sound fruit throughout December. This specimen on the table is No. 4, which had been kept in an open box, and was one of the best of the class, and nearly equal for some purposes to Nos. 9, 15, 33 and 43. These and the Delaware he would rank far ahead of the Concord, which could not be handled nor shipped, and he believed the time was near when some other grape would be substituted for the Concord. If the selection were left to him, with his present knowledge, he would substitute the Salem for it.

Mr. LAWRENCE endorsed every word that Mr. TUTTLE had said about these grapes; had fruited Rogers Nos. 4, 9, 15, 19, 33, and the Salem, and had found them all good and very desirable varieties, so much better than the Concords that he had concluded to dig the latter up and supply their places with the others—that fruit had even rotted on the vine, and could not be kept after it was picked. The Iona did not come up to his expectations, and he should let it go. He had always been opposed to placing the Concord at the head of their list, but had been voted down; he hoped now the time had come when all would be willing to put the Delaware, where it belonged, at the head. The only objection ever urged against it had been the size of the berries; but their good qualities ought to reconcile any one to that objection; were he to select a list of four varieties, that should combine the highest qualities, he would name the Delaware, Rogers Nos. 4, 33, and Salem.

Mr. ADAMS could do little more than give his testimouy in favor of the sorts that had been spoken of by the others. In the northern latitudes of Iowa and Minnesota, most kinds did well, but further south he had heard complaints of vines loosing their foliage. This was especially true of the Hartford, To Kalon, and Northern Muscadine—those also dropped their fruit badly. The Delaware was his first choice, all things considered; after the vine was well established it would yield as great weight of fruit as any other sort he had ever tried.

Mr. GREENMAN said the Janesville was ripe on the 10th of August last year, and he had reports of its good qualities from other places, especially in the north, confirmatory of this quality of early ripening.

Mr. MCAFEE said that at Freeport the Concord was considered the best. The Ives was placed second, and the Perkins third. He was glad to see so good grapes as were the Rogers, so well represented, endorsed and commended, but it appeared that a slight difference in locality made a vast difference in quality, and required a new and different list of varieties; with them Rogers No. 15 stood fourth, and the Salem was placed below, because these were so subject to mildew, and rotted on the vines before ripening. But if any one wanted a vine for its hardiness, good for culinary purposes, ripe August 5th, makes a good jelly, not bearing large bunches, grows anywhere, covers a bower, an arbor or out-building, without care, he would say to such a person, plant the Reinike, which resembled the Clinton, but bore a less compact bunch. Growers must take care in obtaining the Perkins. There was a spurious sort, but the genuine one was a good and valuable variety.

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Mr. LAWRENCE thought the price at which grapes sold was the best indicator of their value as fruit. He knew that when the Concord, in Janesville, would bring but twelve cents, the Delaware would command twenty cents a pound.

Mr. HOILE confirmed this statement as to the difference in prices in the market at Oshkosh.

Mr. OTT of Madison, said that if the Concord was designed for market, it must be picked before it was ripe. Delaware was his best sort, all things considered.

The recommendation of the committee was then adopted.

During a recess that occurred at the close of this discussion, the fruit on exhibition was devoured by the visitors with great gusto, and many wishes that such an exhibition could take place every week at least.

After the meeting was again called to order, Mr. GREENMAN read the following:

ARTIFICIAL HEAT IN THE PRODUCTION OF GRAPE VINES.

Artificial heat in the propagation of grape vines, from eyes and cuttings, has the sanction of being used for nearly a century, as well as the endorsement of nearly all the books of recent date on the subject, together with the testimony of many practical men in its favor. Exceptions have been taken by some horticulturists to this mode of growing vines, and their practical experience and extended observation entitle them to a hearing. Now, as to whether the use of bottom heat has a tendency to weaken the constitution of vines thus grown, should receive your careful consideration. That good, healthy plants are grown by its use, no one will deny; but that any considerable number of the plants made by this process are such, we may have some reason to doubt. A temperature of ten or fifteen degrees in the border, above that of the surrounding atmosphere, is conducive to the production of an abundance of roots; thus laying the foundation for strong, healthy plants. To secure this, propagators use the common flue, or that which is more uniform and reliable, the hot water tank. The advantages gained by the use of glass structures, with the aid of bottom heat, in rooting the cuttings, are nearly overbalanced by the difficulties attending their removal to the open ground, and will almost condemn the whole practice. The tender foliage and succulent growth of the canes in the confined atmosphere of a hot-house, is almost sure to receive a check in growth in transplanting, and requires great skill in hardening off the vines; when this is successfully done, the vines are second to none in quality. But those that are scorched by sun rarely recover so as to make strong healthy plants. This matter is of no small importance to the people, as tens of thousands of these vines are grown and sold annually.

Knowing from experience the advantages arising from the use of bottom heat in rooting grape cuttings, I have asked myself this question, cannot the disadvantages in transplanting be avoided, and at the same time secure all the benefits arising from the use of bottom heat? Many devices have been used, and some of these

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patented, for transferring the young vines to the open ground, and thus solve this problem. But these boxes and traps have accomplished very little, as they do not do away with the necessity of shading and hardening off the vines, and right there lies the great object of success; were it not for the injuries received in transplanting, this process would be very desirable. After some years of experience in growing vines, I have found, that to be uniformly successful in procuring strong, healthy plants, some modification of the use of bottom heat must be made. Hence, I have constructed a frame which combines all the necessary conditions of success in converting cuttings into perfect plants, producing an abundance of roots, and is very simple in its construction—the model before you is one on a small scale.

These frames are made by using strips of boards, four inches wide, set up edgewise; the first or outside space is ten inches wide; the second is five inches wide; the third is ten, and so alternating, leaving off with a ten-inch space, and the frame may be of any desired length and width. Twelve feet long and five and one-half feet wide is a good size; this makes five wide and four narrow spaces.* These upright boards are held in place by nailing strips across the ends. The frames should be placed side by side on the border, leaving a space of five inches between each one. Plant two rows of cuttings within the five inch spaces, with the top bud just at the surface of the ground; these cuttings may be set with a dibble or otherwise, but great care must be taken in placing the soil firmly around the base of the cutting, as without this precaution failure is almost certain. Cover the cuttings to the depth of three inches with saw dust, or if this is not at hand use sifted chip dirt, this will keep the buds dormant. Then lay on your sash, made of 8x10 glass, six feet long, or strips may be tacked upon the inner sides of the ten inch spaces and the glass laid thereon, and can be removed when no longer wanted.

Thus we have a succession of narrow glass houses, with beds of cuttings between each one; the direct rays of the sun upon the soil under the glass will raise the temperature from ten to fifteen degrees above that of the adjacent soil, and will diffuse the heat under the entire bed, and will be retained to a great extent during the night, while the mulch of sawdust will keep the buds dormant until the roots have started, thus securing the most favorable condition of growth. And here comes in my heating apparatus without fuel or furnace, having all the advantages of a hot water tank and at the time doing away with the necessity of transplanting the vines. As soon as the cuttings are rooted the canes will force their way through the mulch, and grow without let or hindrance. Remove the glass, clean out the weeds between the rows, fill the wide places with old straw, which will save further cultivation. Take up the frames and store for future use. Cuttings of the rose,

*There must be a mistake in these measures, as five wide spaces take fifty inches, and four narrow ones twenty making a total of seventy instead of sixty-six inches. The description makes the ten inch spaces full, consequently the five-inch or narrow spaces must be reduced to three inches, or the frame be still further increased by the thickness of all the boards, ten in number, thus requiring eighty inches; or two spaces must be cut off, leaving the frame but sixty-three inches, or two less than named in the paper. A slight change in the description will correct this point: Make a frame of convenient width for working, having reference to the width of the panes of glass, whether lapped or not; and long enough to make four ten and four five inch spaces, including the partition and end boards. Let the spaces run across the frame. Such frames can be placed in a row or rows, the desired length; except that the end or finishing frame must have an extra ten inch space. Such frames, without their glass, could be readily handled by one man. A frame twelve feet long would require two men to lay them.—SECRETARY.

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pear, plum, etc., may be successfully grown in this way. The sash can be used in the early part of the season on the hot bed, in forcing early vegetables, if desired, or when strips are tacked to the frame, the glass should be boxed and stored for future use.

The Delaware rooted very uniformly, treated as above, the past season, and when dug excelled any one year I ever saw, while cuttings from the same lot of wood, started under glass with bottom heat, and transplanted with great care proved very unsatisfactory. I therefore conclude that bottom heat, as used in connection with glass structures, will be likely to effect the constitution of the vines thus grown, and that the practice should be abandoned by propagators, and that vines grown as described above will be of first quality, and when planted in the garden, or vineyard, will not fail to supply its owner with an abundance of fruit, from year to year: and finally die of old age.

Mr. KELLOGG explained that he prepared the ground on which the frames were to be laid by making it very mellow and fine, but flat, and then placed the frames before sticking the cuttings. If they sloped somewhat under the wide spaces it was as well, or better, as that gave them better heat, and more space for the roots. The mulchings used in the operation tended to keep up the richness of the soil. He said that though he supposed the fame was patentable, he did not propose to claim it; but would willingly give it for the benefit of horticulture.

The paper was very favorably received, and its merits acknowledged.

ACTION ON SECRETARY'S REPORT.

The committee on the secretary's report, made their report, viz.:

Your committee to whom was referred the consideration of the suggestions of the Secretary, have carefully considered the same, and they heartily indorse the same; and submit the following resolutions as the best and readiest way of testing the wishes of this society in regard thereto.

SIGNED BY THE COMMITTEE.

1st. *Resolved*, That we approve the recommendation of our Secretary, relative to asking an appropriation from the present legislature, for the purpose of defraying the expense of publishing our reports, at an early day, and separate from that of the Agricultural Society; [and also to pay the expenses of the officers of this society, or any of them, in visiting existing local horticultural societies, from time to time, and organizing new societies in parts of the state, where they do not now exist. The appropriation to be asked for not to exceed $500.]

2d. *Resolved*, That we deem the appointment of a State Entomologist is a matter of the utmost importance; believing that not only the interests of this society, but of the state at large, will be advanced thereby, and that the attention of our legislature be called thereto by our President and Secretary.

3d. *Resolved*, That the committee on nomenclature, with the Secretary, be au-

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thorized to procure drawings and engravings or lithographs of such new fruits or seedlings as may be considered worthy of dissemmination.

4th. *Resolved*, That the report of our Secretary relative to the success of the experiment in holding a summer exhibition, fully warrants the holding of a similar one the present year, at such point as shall be decided upon by the executive committee, as being the one offering the most satisfactory inducements.

5th. *Resolved*, That in the event of the legislature failing to comply promptly with our request for aid, in the matter of publishing our proceedings separate from those of the Agricultural Society, the Secretary is anthorized to cause to be printed a brief synopsis of the proceedings of this annual meeting immediately, and that the expense be defrayed out of the funds in the treasury.

6th. *Resolved*, That the President and Secretary do open a correspondence with the officers of kindred societies in other states; and, if thought best, to organize, in the fall, or join with them in a call for an exhibition.

These resolutions were passed as presented by the committee, except that the first was amended by striking out all after the words "agricultural society," and included in brackets.

DR. HOBBINS ELECTED A LIFE MEMBER.

On the recommendation of the committee to make nominations for the officers, Dr. JOSEPH HOBBINS, the late President, was unanimously elected a life member of the society.

ELECTION OF OFFICERS.

On motion of the same committee the society proceeded to the election of officers for the ensuing year, which resulted as follows, viz:

President—J. S. STICKNEY of Wauwautosa.
Vice President—A. G. TUTTLE of Baraboo.
Recording Secretary—O. S. WILLEY of Madison.
Corresponding Secretary—GEO. E. MORROW of Madison.
Treasurer—GEORGE A. MASON of Madison.
Executive Committee—Messrs. M. ANDERSON of Cross Plains; I. J. HOILE of Oshkosh; and G. J. KELLOG of Janesville.

NEXT ANNUAL MEETING.

Mr. PLUMB offered the following resolutions, which were adopted, viz:

Resolved, That it is the policy of this society to enlarge its field of labor, and diffuse its influence as much as possible; therefore,

Resolved further, That our next winter meeting should be held in some more northern section of the state, or elsewhere.

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STATE FAIR.

The following was received from the State Agricultural Society:

MADISON, February 9, 1871.

To the President of the Wisconsin State Horticultural Society:

SIR: On behalf of the Executive Board of the Wisconsin State Agricultural Society, I have the honor to report the adoption of the accompanying resolution, as the result of their action upon the request made by your society relative to the amount to be appropriated for the expenses of the horticultural department of the next state fair. The full amount requested would be gladly appropriated did circumstances seem to warrant it. But inasmuch as $800 is a larger advance upon the amount heretofore used in said department than has been the case in the other departments of the exhibition, it is presumed that the action of the board will be satisfactory.

Respectfully your obedient servant,

J. W. HOYT,
Sec'y Wis. State Agricultural Society.

Resolved, That the sum of eight hundred dollars is hereby appropriated to the Wisconsin State Horticultural Society for the premium expenses of the horticultural department of the state fair of 1871: *provided*, that at least 50 per cent. of said amount shall be offered in cash premiums in the non-professional classes.

The proposition was accepted on the part of this society, and the State Agricultural Society notified accordingly.

PREMIUM LIST.

The committee on the premiums made their report, which was adopted. This list will be found in the lists put forth by the State Agricultural Society.

SMALL FRUITS.

The lists of those given on page 99 and there reported as adopted, did not pass without some discussion.

Mr. LAWRENCE, speaking of these generally, thought it best to merely name these fruits, without expressing any preference of their value or quality; and hence there should be no numbers or other means used to designate any preference; but the lists should stand in general terms.

Mr. STICKNEY had been cultivating the Ancient Briton blackberry for three years past, and had been observing its habits for five years, and had found it uniformly hardy when fully matured. It only killed back when the winter comes on early and finds it in full growth.

Mr. LAWRENCE had grown it for two years, and had found the tips of the bushes killing a little. He was not satisfied that it was any better than the Kittaniny. He

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had observed that the fruit was much the best when grown in the shade, and thought that blackberries should be grown under the protection of trees; and where they could and should be mulched, to be successful.

Several others who had seen this blackberry spoke of it in favorable terms, and expressed great faith that it would yet be successfully raised in this state.

The inquiries being made about strawberries, and the Agriculturist being named,

Mr. Hoile remarked that he had seen a plantation of these, but it was so grassy that he could hardly tell what they might do; but he thought, from the experience of others, that it promised well.

Mr. LAWRENCE had fruited some of the newer sorts, and had found some of them promised well. The Agriculturist was still with him the favorite berry, and retained its reputation. He did not grow the Wilson any more, and could not afford to give it room in his grounds.

Mr. WILLARD thought the Borden's, No. 30, was the best for family use, if not for the market; and this opinion was confirmed by Phœnix and Fuller.

Mr. ADAMS had fruited it the past season, and it promised very well, and he thought that every one would want it as soon as its merits were understood; it was a very vigorous grower, and fine fruit. The Charles Downing does not, on trial, come up to what it promised, nor what was expected from the encomiums heaped upon it. The Nicanor was in the same category.

Mr. HOILE thought the time was not far in the distance when the Borden's, No. 30 would lead the list of strawberries. He intended to give it a thorough trial by making it a speciality. While it had exceeded all the others thus far, he had given it no more care than had been bestowed on others.

Mr. WILLARD had fruited the Wilder for one year only; but it had not come up to his expectations, and he would not sell it to any party with the endorsement that it was a first-class berry, because he did not so esteem it.

Mr. ADAMS hed heard nothing said about the Russel; he thought that one of the most profitable and best of berries.

Mr. STICKNEY was willing to confirm all that had or could be said of the Russel as a first-class berry.

Mr. ADAMS said his experience was that the soil made a vast difference. The same was true of the Jucunda; whether that should be successful or not depended on the soil upon which it grew.

PEAR CULTURE.

Mr. WILLARD being called on for remarks, on any question he might choose, confined his remarks to the culture of pears. They had made the rearing of pears a specialty, at their nursery in Rochester, and were supplying not only a large stock to New York state, and the west; but within a few years they had been supplying pear raisers, for the Philadelphia and Baltimore markets, with trees; because the

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small trees could be more readily reared in the north than in the south. The best preventive, he had yet discovered for the blight, that caused so much damage, was a free use of salt upon the ground, and especially in the vicinity of the trees, where the roots could absorb it. He had seen eight and even ten pounds applied around a single tree, and it had caused immense yields of fruit. So well was he convinced of the necessity of the use of salt for the benefit of the pear tree, that he had prescribed it, for trees that appeared sickly, and almost dying; and they had recuperated, and not only become again vigorous, but fruitful to a degree that astonished all, who had before known them in their sickly condition. He illustrated what he had to say, by instances of almost fabulous yields of pears, on both dwarfs and standards. The conclusion he had arrived at, was that the quince and the pear both required a large amount of salt for a healthy growth, and for productiveness.

Several others gave their testimony to the good effects of salt as a manure for the pear and the quince.

The society then adjourned to 2 P. M.

At two o'clock P. M., the committee on Nomenclature, by J. C. PLUMB, made a verbal report, speaking of several very promising seedlings that had been presented to them for consideration. Mr. STICKNEY, from the same committee, remarked that in his opinion, there had not been an adequate trial yet made of any of these seedlings, and that an effort should be made to effect a more thorough trial of them; he therefore offered the following which was adopted:

Resolved, That our committee on seedlings be autthorized to make a collection of the seedlings of our state for a five years' trial, under such regulations as they may deem proper.

G. P. PEFFER then read his

REPORT OF OBSERVATIONS DURING THE PAST YEAR.

MARCH, 1870.—The snow has all gone; it all seemed to disappear at once; and I find many trees girdled from the mice; and on more the bark has slit near the surface of the ground, caused by the early frosts during last October; and before the wood was well ripened. Many of the nursery trees are killed down to the ground; no matter what the sorts, whether apples, pears, plums or ornamental trees. All that was not ripe, have been injured more or less.

APRIL.—The weather has become quite warm; the buds are starting very fast, and it is warm enough for summer. The peaches are blooming very full; and the season is remarkably early. They must look out, or they will get caught in a frost.

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The strawberries are also in bloom; but the currants and gooseberries make a slimpsy show of blossoms, and little fruit is to be expected from them. The soil is drying rapidly, and the roads are becoming hard and very good. Tree planting is mostly over; because everything is nearly a month ahead of the usual season, or of last year. All the plum and pear trees, that last year lost their leaves early in the season, and made a second growth in the fall, are now dead. The old, large apple trees that had suffered from mildew and scab last summer, have their fruit buds undeveloped this spring, and show imperfect blossoms; these did not ripen up, after the leaves covered with mildew, which caused them to stop growing.

MAY.—Almost everything that perfected its blossom buds last summer, is now in bloom; but those that did not make perfect blossom buds are either bloomless, or have imperfect flowers now. Trees that last year, had good sound fruit without scabs, and leaves without mildew, are now the most perfect in blooming; still many sorts are imperfect. Raspberries are in full flower, and look promising. Grapes have a weaker show; but it is yet too early to determine fully. The ground is getting quite dry, and mulching is necessary, for fresh set trees and to secure a full crop of raspberries.

JUNE.—We had a small shower early in the month, which wet the ground an inch, but the sun was so hot, and the air so dry, that in three hours time the effect of the shower was all gone. The following varieties of apples are setting well; Red Astrachan, Duchess of Oldenburg, Tallman Sweet, Fameuse, Swaar; (this must be top-grafted), Plumb's Cider, Rambo, Peffer's Farmer, Golden Sweet, Fall Greening, Jonathan and Domine. Those that do not bloom well are the Yellow Bellflower, Pomme Grise, Black Detroit, Pumpkin Sweet, Sweet Russet, Boston Russet, [Roxbury Russet,] Northen Spy. Newtown Pippin, Fall Pippin, Holland Pippin, Queen Anne, Fall Stripe, Queen, Summer Queen, Summer and Winner Pennock, and some others. Among the pears the Flemish Beauty is most promising; followed by the Ananas d' Ete, and several good seedlings. Of the good plums I notice the fine appearance of the Lombard, Imperial, Washington, Blue Damson, Duane's Purple and Partrigan; all these have bloomed well. The grapes that are setting full, are the Concord, Delaware, Clinton, Roger's Nos. 4, 9, 15, 19 and 22; those that are not as full, or where the blossom buds are hurt, I notice the Isabella, Iona, Salem, Martha, Northern Muscadine, White Muscadine, Vermont, Adirondac, Diana, Eliza, Norton's Virginia and some others.

JUNE 25.—No rain has fallen yet. The strawberries are mostly dried up; raspberries are in the same fix, except where they have been heavily mulched. Root grafts, that had made two or three inches of growth are drying up, and dying, on account of the drouth; cuttings of all kinds are dried and dead. Curculios are very plenty and have commenced their work of destruction; and the bark lice swarm in numbers. I have applied ashes and lime to them, and they do not stop their increase or ravages; because there is scarcely any dew to moisten the bark, and make the ashes and lime stick.

JULY.—The fourth has come, and berries of all kinds are small, and scorched. The crop of raspberries is a failure. The currant worms are plenty; but by the

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use of air slacked lime and Paris green, I have used them up, before they have used up the bushes. I have done the same with the rose slug, on the rose bushes. I put on the mixture early in the morning, when the dew is on, to make it stick to the leaves. The grapes are doing finely; and the apples and pears are remarkably promising; if the codling moth does not get too plentiful. I find the plums and peaches cost more than they are worth, on account of the workings of the curculio. It is now four weeks since we commenced to jar the trees to catch them; and still they come, almost as fast as do the Colorado potatoe bugs.

AUGUST.—The 15th has come, and the early Burgamot pears are ripening, and we have picked them to-day. The early apples are fit to pick. We have had some good showers of late, but rather too heavy, as the water has run the loose top soil off into the low lands. Found and picked ripe Delawares on the 28th. The plums are also ripe now, and so are the early peaches. There has been no fire blight on the pear-trees yet, nor mildew of any kind thus far. The fruit buds and wood is mostly ripened on the trees that are bearing fruit; if no fall growth shall set in, the trees will winter better than they did last year; on the whole there is a good prospect for next years fruiting. A second crop of the Codling moths have hatched out: and most of the apples are stung, and worms are rapidly growing in them. I have tried to catch them by the use of low kerosene lamps set in large milk-pans filled partly full with water, and have destroyed a good many of all sorts, which I find in the water of the pan in the morning. The greatest catch takes place in the evening, when it is getting dark, as they fly most at that time of the day.

SEPTEMBER—The fair at Oconomowoc took place on the 7th, and I attended with a good selection of early apples, pears, plums and grapes. As that is one of the best localities for apples around these lakes, and, as I think, in the state, and as I had four strong competitors for the prices for apples, I took nothing on them; but for grapes and wine I took the first premiums. The attendance was rather small, on account of the rain during the two proceeding days, and the society came out in debt.

SEPTEMBSR 17—We have just got home from the Waukesha county fair, where I had fall and winter apples, and smart competition, but obtained prizes on apples, pears, plums and grapes. The society has had the best show ever made at any fair I have ever seen in the county since the organization of the society; still, owing to the unfavorable condition of the weather, the turn-out of spectators has been small, and the expenses have not been met and paid; for that reason the society has voted to exhibit as a county at the state fair in Milwaukee, and I must exhibit in the county, as one of its members, although I preferred to appear in my own person. The show of fruit has been remarkably fine; no specks nor mildew on the fruit or vegetables. Apples are so plentiful that the best for fall cooking are selling at retail at fifty cents per bushel, and nice Flemish Beauty pears at one dollar and a half a basket. Winter apples are two dollars and a half a barrel; cider apples are twenty.five cents a bushel, and cider is from twenty to twenty-five cents a gallon.

SEPTEMBER 20.—Have began to-day to gather our winter apples, and find about a third of them wormy, which have to be rejected, and fed to the pigs and cows.

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Tallman Sweet are worst affected, followed by the Golden Russet, and others. A rain that commenced to-day has stopped our picking apples and gathering grapes.

SEPTEMBER 25.—Have been looking up my new seedlings, and find fifty-four varieties, among 400 trees, one-half of which are bearing; these varieties will answer for use without top-grafting. Some of them are as fine and good looking as the best of grafted fruit; eleven sorts not before exhibited, will do to present at the fair. These are all from Wisconsin grown apples, the seeds of which were planted in 1851, from such varieties as then promised well. I planted thirteen seeds of the Westfield Seek-no-further; eleven trees have been raised and are now bearing fruit; all came from one apple; but nine of them are mostly sweet apples, and only fit for cider—one is a very good sub-acid, and is a passable apple. Out of four trees from the Herford Pearmain, only one is good; and of seven trees from the Yellow Bellflower, but one is passable. The rest are worthless except to be top-grafted. I have four new good seedling pears; one quite large tree, and thus far thrifty and healthy. The seeds of these were planted in 1850, they commenced bearing sparingly in 1865; in 1868 they produced a full crop, and this year the crop has been good. I find six new crab apple trees bearing as many varieties of fruit; some as hard as stones,. but of good size and flavor; the seeds were planted in 1864 from the Hyslop crab.

OCTOBER.—I have got home from the state fair, where we have had a good time, indeed, for fruit-growers. Waukesha county was well represented in the horticultural hall, but it did not get the prize, on account of some informality, not because it was behind any other county. Horticultural hall, though the largest we have ever had, was still too small, to give sufficient room to exhibitors, to make a good show. Everything was crowded together, and everything overflowing with fruits and flowers, from the different portions of the state; but the best and finest looking fruits were from Baraboo and Wisconsin valleys; although very nice fruits were shown, that were raised within twenty or thirty miles of lake Michigan. Horticulture seems to be much more successful and interesting, and more satisfactory than in years gone by.

The 15th of October is here, and it has been a very fine fall. We have had some heavy showers since the state fair, accompanied with hail, which has spoiled the fruits not yet gathered, and by it we have lost a good share of the winter apples; and among them Ackerman, Pewaukee and other new sorts that were promising. The grapes remaining on the vines were mostly gathered by the robbins while I was at the state fair. The sapsuckers, as they are passing here on their way to the south, are spoiling a good many trees, both in the orchards and gardens. The gun is the only remedy for these pests.

NOVEMBER—The weather is fine and remarkably good for this time of the year. Fruit is all stored, and cider mostly made. The trees are in the best condition for wintering that I have seen since 1860. The fruit buds are all fully developed, and wood well ripened up; trees, branches and roots will pass the winter well, if we get snow before the ground freezes too deep.

DECEMBER.—No cold weather as yet. The roots and vines for grafting are in the

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cellar. The ground is mostly all plowed in the orchard, etc., etc. Mice and rabbits have a good supply of sweet apples and corn soaked in warm water, and all well seasoned with strychnine. Many of my neighbors have been ordering their Russian, Crab, Norway and winter and fall apple trees, at from one to four dollars each, from the agents. All right! See how they come out in the end. Christmas—We had a few inches of snow fall on the 21st, and quite cold winter weather since the 22d. The thermometer was below zero.

JANUARY, 1871.—It is now the fifteenth, and there has been another snow storm, though we had a thaw of three or four days before this last set in. This storm came from the east, and blocked up the roads. On the twenty-fifth I find the rabbits are again at work on the nursery trees, and I have just given them a new supply of sweet apples, cut in slices three-eights of an inch thick. One side of these is scraped and mixed with strychnine, and then the pieces are stuck on sticks, so as to be about twelve inches above the snow, with the poison side below, so that the rain and soft snow will not wash off the poison. I find the rabbits sit on their haunches and eat the apples without pulling them off the sticks; and by finishing the rabbits in the winter, we have many more apples left for next year.

To conclude—we have had a long and dry summer; no frost for about eight months; to this cause I attribute the fact that apples of heretofore winter varieties have matured so early as to be full apples; that it has also caused the apples of northern origin, to be smaller than usual, while apples from the south are larger this season, and fully matured in this state. This long and dry summer has also been very productive in insect life. The aphis, in particular, are more than commonly abundant. I find a sure remedy for these in an application of quassia and tobacco water. Quassia wood, at the rate of a pound to eight gallons of water, and one-half pound of tobacco stems, steeped in boiling water, is a proper proportion. This may be applied to the aphis by a syringe, by sprinkling over the tree, bush or vine, on both sides of the leaves if possible, or by immersing the twigs in a vessel containing the liquid, so as to saturate all the parts; this last method has given the most satisfactory results.

After this paper was read, and some remarks upon the several points suggested by its readings, generally agreeing with it, Judge J. G. KNAPP read the following:

THE NATIVE VEGETATIONS OF WISCONSIN.

The wealth of a nation consists of the raw material and the labor bestowed upon it. The raw material is derivable from the earth, some from beneath, more from the surface. All is of "the earth earthy" and in the epochs of time again returns to the earth from whence all is derived. Labor removed but one degree, is also of the earth, guided indeed by will and human knowledge. A nation to be wealthy must abound in the raw material, and the labor to form that material into the objects desired for the comfort and happiness of its people; and that nation is most wealthy whose people are best supplied with necessary raw material and the labor to form

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the objects. The miner raises from below the metals corroded with the rust of periods, and the metalurgist reduces them for the next laborer who advances them towards or into the objects desired. The miner exhausts as he goes; the mines no more renew themselves; and it is providential, that the laws of the veins, are as hidden from human kin as are the deposits themselves, because it leaves some for the future generations. The raw material from the surface is from an inexhaustible source. The germ of life falls on the earth, and nature, ruled by nature's God, produces materials in successive generations. The ashes of one age and period are the storehouses of food for the life of other ages and periods. And as in the beginning, so now, the earth brings forth from the seed within itself, and will do so during all the cycles of time. No matter whether the food be wanted for plant or animal, its source is on the surface of the earth.

Below are hidden the sparkling gems that dazzle the eye, after the hand of the lapidary has made it flash back the light of heaven. But on the surface more beautiful gems are formed, day by day, in nature's laboratory, pleasing to the senses of smell and taste of all animals, and indiscribably charming to human sight. Swine trample alike on gems from the fields and the mines. When time and reproduction is taken into account, the products of the surface is incomparatively greater than the products of the mines. Less attention has been given to those, because they are more common and more easily procured than these; but their importance in the storehouses of wealth is in the ratio of their quantity. If the one deserves the attention of the statesman and scientific for its development, the other should not be neglected. Forests of trees contain more wealth than veins of metals. Fields covered with the harvests of the farmer are richer than mines, because they will never be "worn out," and they leave no dangerous holes for graves to the unwary, nor unsightly rocks covering the surface.

If we know little of the laws of the heavenly bodies, little of abstract sciences, are we in fact better informed of our vegetable productions, when and how they grow, why they are found in one place and not in another, than we are of the laws of our mines.

These remarks have been made as introductory to a hint at some work upon

THE NATIVE VEGETATIONS OF WISCONSIN, OR ITS VEGETABLE BELTS.

Wisconsin is unlike most, one might say all, the other states in the Union, in several particulars. All have seen, felt and acknowledged the effects of the heat, cold, and drought upon the cultivated crops, and the fruit trees that here have been attempted to be reared. Probably few have considered the effects of these same causes upon the native vegetations of the state. It is not intended to enter into any detail of this matter. and I have not the time, nor material necessary to do so, even if I desired. A line of investigations for some future explorer, more ambitious and better qualified, can only be hinted at, and attention directed towards a great unexplored field.

As geologists have described regions according to the surface rocks, so may this state be divided and described according to the native vegetations of its different parts. Without pretending to exactness, but merely to illustrate an idea, four divis-

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ions will be named, in which a marked contrast will be acknowledged—the Canadian, the Ontario, the Michigan, and the Wisconsin belts. These names have been taken rather at random than because they are correct. Any other names would have acquired definitions to explain what was meant.

The Canadian belt occupies the whole north portion of the state, and covers nearly one-half its absolute surface. The tall white pine (*pinus strobus*), hemlock (*abies canadensis*), fir (*A. balsamea*), spruces (*A. nigra*), and white cedar (*thuja occidentalis*), here grow dense, dark, evergreen, shutting out the light of the sun from under them. Mosses and ferns, from a still more northern region, cover the ground, and everything on its surface, a foot or more in depth; other mosses and liverworts coat the bodies and limbs of the trees. The white birch (*betula papyracea*), and yellow birch (*B. excelsa*), whose home is still farther north, are often met with, and relieve the eye. The black ash (*fraximus sambucifolia*), willows, alders, and red osier (*cornus stolenifera*), are growing along the water courses and cover the swamps; maples, oaks, elms and beeches grow on the driest ridges, and some are found among the pines. The marshes are filling up with peat plants, and their waters are colored like the tanner's vat. The undergrowth gives among edible fruits the service berry (*amelanchier canadensis*), red raspberries, (*rubus odoratatus* and *strigosus*), the large, long, sweet blackberry (*R. villosus*), high-bush cranberry (*vibumum oxycoccus*), and sweet viturman (*V. lentago*); on the dry sandy ridges, where the trees are scarce, the blueberry (*vaccinium canadense*), and the red berries of the aromatic wintergreen (*gaultheria procumbens*), abound. Now and then a tree of the sour red plums (*prunus Americana*), and American crab (*prurus coronaria*), are seen in favorable locations. It is not naturally a region of fruit-bearing plants; but from the protecting influence of the evergreen growths something may be expected in that line with hardy varieties. This region has a large snow-fall, that, melting here, lodges in the swamps and marshes, and keeps up the current of the rivers and streams during summer, and produces a moist atmosphere under the shade of these same evergreen, and a coolness not unlike a cellar. The region also has a greater rain-fall than farther south. When the dry lands, and especially those covered with the deciduous trees, are divested of timber, and the soil is "tamed" by manures, the thick coats of snow, rains and damp atmosphere, will cause this to be a good winter wheat and grass region. The warm summers throughout the whole extent will also ripen early corn.

Next south lies the Ontario belt. The hemlocks, spruces, white cedars, firs, and the white and yellow birch are now found only in dark, damp, shaded places, where the coolness of the Canadian belt can be found. The white pines here grow on the border of marshes, often in them, where dampness abounds. The red pine (*P. resinosa*) often called, but improperly, the Norway pine, and the black, gray or northern scrub pine (*P. banksiana*) cover the dry sandy lands. The tamarack (*Larix Americana*) occupies the place in the wet grounds filled farther north by the white cedar and the spruce, and the cranberries (*vaccinium oxycocus* and *macrocarpon*) supplant the mosses, in the peat bogs, and blueberries cover the sandy ridges and plains. The timber is generally deciduous, such as was found farther north, to which must be now added the burr oak, the white ash, butternut, (*Juglans*

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cinerea) and hickory (*carya*). The oaks, maples and elms increase in number and size. This belt skirts along the Canadian, often narrow, and resembling the openings. It fills the region east of lakes Winnebago and Horicon, and down the shore of lake Michigan as far as Racine. The beech is found only in the vicinity of the lake. It will require many observations, perhaps more than can be made, to define its boundaries definitely, as so much of the native forest has been cut away. The edible fruits increase in number and quantity. To those found farther north must be added the cap raspberry, (*R. occidentalis*), crab apples and plums become more common, several varieties of thorns (*cratægus*), and cherries (*cerasus Virginiana* and *serotinus*), and the strawberry (*fragaria*). That portion along the shore of lake Michigan, will be found the best portion of the state for apples, and perhaps for pears. This belt receives a fair snow and rain-fall, and produces good winter wheat, and tame grasses, and is good grazing lands. The flint corns grow well, and the heat is generally sufficient to ripen the Delaware, and other early grapes.

Next to this lies the Michigan, or belt of "openings." This belt is sometimes very narrow or lost as in Winnebago county, at others it reaches far down into the Wisconsin belt as in Richland. It reaches from Prairie du Chien to Hudson, and from La Crosse to the Wolf river; it is very narrow east of Lakes Winnebago and Horicon. Less rains and snows fall on this belt, than on the Canadian and Ontario belts; and it is not as good for winter wheat and grasses; but the dent corn will grow on most of it; and the Concord grapes will ripen, and melons will flourish to perfection. The clay lands of this region produce the white oaks, maples, elms, butternut, shag-barked hickory; and in some places the black walnut (*J. nigra*), is found. The white ash, bitternut, and silver leafed maple seek the moist lands along the river and creek bottoms. The white and yellow birch is gone, with the hemlocks, cedars, spruces and firs; but the red birch is now found in the sands of the rivers.

Among the fruit-bearing trees two very marked varieties, if not species, of red plums are found; one almost exclusively in the north, from the Canadian belt, is olive-formed, large, tender skinned, bright red, astringent and sour; is very subject to rot even on the tree, and is early ripening. It is about as liable to the attacks of the curculio, as the foreign plum, and it is of little value. The other variety or species is generally round, thick skinned, mostly sweet pulp when fully ripe; colored from dark red to yellow, generally clinged but sometimes free-stoned; they differ greatly in size and flavor, and time of ripening; the largest and sweetest ripen earliest. From the great diversity of this species, hopes are entertained that careful cultivation may in time develope from this, a fruit adapted to this climate, perfectly hardy and of great value, especially if it can be hybridized with the gages. The blackberries of this belt are generally of the small, sour variety, and nearly worthless; yet in some places the large, long, sweet berry from the Canadian belt is found. These two varieties are readily distinguished. The large, sweet berries grow on the largest bushes, with stout recurved prickels, and the flower leaves are larger and rounder, consequently more showy than the other species. If a thornless one of these could be found it would be an immense acquisition; at any rate, gar-

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deners ought to look to this native variety for their stock of blackberries, rather than to the nurseries of the east, where they are likely to get plants that have been brought up from the south, and are tender. The service berry is found sparingly, and the birds devour the fruit as fast as it ripens. The blueberries and cranberries abound in the north of the belt, but are seldom seen in the south. In the south on the dry ridges the black huckleberry (*gaylussacia resinosa*) bushes are found, but they do not bear well, and the birds take the fruit.

The sand of this region produces scrub pines and black jack oaks (*Q. coccinius*), always scrubby, generally with half dead tops; burr oaks are in the swales, and on lands of a more calcareous nature, and the pig nut hickory (*carya glabra*) is found with them, and especially on stony ridges in the south.

A large crop of grasses and other plants, annuals and perennials, grow here, many of which are gay flowered; these formed a thick coat for the devouring fires that ran over the country in former times, and caused much of its openings character. The wet lands, where grew grasses fit for hay, were the prairies of this belt.

The southernmost belt I have denominated the Wisconsin. It is the region of alternate woods and prairies. It may be bounded generally by the Wisconsin and Fox rivers, lakes Winnebago and Horicon, the Fox river of Illinois, and the Racine; and includes several large tracts of deciduous timber, of the New York type. It might and perhaps ought to be divided, so as to take the east half of Dane, Jefferson, a corner of Walworth and most of Racine counties. The portion thus cut off has many things in common with the Michigan belt, and more things agreeing with the Wisconsin belt, such as the tamarack, is found in the marshes; and peat bogs, are often met with. On such a diversion they might be designated as the Wisconsin and Iowa belts. To those best acquainted with this Wisconsin belt, it is known to be anomolous; to those not so acquainted, it is difficult to give a description that shall be comprehended. The driest lands here are calcareous, and bore immense crops of grasses that were killed by the first frost, and soon becoming dry in the almost rainless autumns of this belt, made food for the fires that annually spread over this region in early days. Thus the surface was left destitute of mulch to catch and retain the winter moisture, or to coat the surface from the influence of frosts, where there is but a light snow fall. The compact net-work of grass roots, acted as a thatch to turn off the water that would otherwise have entered the ground, and afford wood for trees, and so none grew. Grass was therefore the death of trees for two, if not for three causes. The only trees that could withstand the fires were those so covered with an incombustible cork, that the heat of the prairie fires could not penetrate to and destroy the cambiun. The oaks, hickories and some poplars could alone do this. But even these were found driven in behind a rampart of hazel bushes, which kept up a continuous warfare with the grasses for the mastery of the soil. The marked character of the vegetation of this region is in strong contrast with the Canadian belt. The whole class of mosses, liverworts and ferns are scarcely seen. But three of the evergreens are natives here—the red and scrub pines, and the red cedar. The tamaracks are found where I suggested a division of the belt. The box elder (*Acer Negundo*), and the honey locust (*Gleditschia*) thorny and thornless, have come in from the south: and a vast num-

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ber of true prairie plants and grasses are found in the driest places. Everything indicates that the atmosphere of the drier plains is here distinctly felt. The trees show the effects of the aridity of the climate and want of moisture in the soil, by their gnarled limbs and dead extremities, and mostly by their short lives. They live among the grasses, but it is a war for existence. Stop the fires, and keep off tree-destroying man and his domestic animals, and watch the result. A nut eating squirrel in his fright, or purposely, drops a hazel nut; it touches the soil, and is covered by the falling grass. It springs up and enlarges its circles as the wave caused by a falling pebble dropped in water, enlarges. The squirrel carries an acorn or hickory nut, and buries it with leaves on the same surface, and it springs up and becomes a tree. The winds in early summer floats the cottony seed of the poplar to the same circle, and it reaches the soil, a shower covers it the hundreth part of an inch with mould, and before the autumn frosts set in it is a little tree up a few inches. The seed of an elm or maple is also floated to the same spot, or is carried there by a storing mouse, and it springs up. A bird has come from a tree, perhaps miles away, but it has brought a cherry in its beak, it lights on a bough of these little trees, devours the pulp and drops the nut where it also reaches the ground, and it too becomes a tree. A similar process plants every tree and bush from the neighboring grove. The hazel has killed the grass, the trees have sent their roots below the hazel's and in turn have killed it; but the ground is now covered with leaves, shaded and mulched, the water no longer runs off and evaporates, but finds its way into the soil and penetrates below, the trees are fed and grow thriftily.

All this may consume the period of generations of men. It is but a point in the cycles of time reaching back into eternity. In all this slow process a lesson is taught worthy the attention of all. Kill the grasses by mulching, and the trees will be fed and thrive even where the dry prairies existed by nature. If hardy forest trees, then hardy fruit trees will grow. If hazel bushes and trees will protect forest trees from the inclemencies of this climate, they also protect other trees for the same reason. But the ground will not do the double duty of growing grass like a meadow, and trees like a forest. The scythe and the teeth of the gramniverous animals rob the ground worse than the fires of old. This left the ashes and the salts. Those leave nothing. A surface soil reticulated with grass roots is impervious to the rootlets of trees, without which the trees cannot thrive, but must starve and die. The short limbs and narrow tops of the trees, native and exotic, in the Michigan and Wisconsin belts, are characteristic of those belts. They seem desirous of covering their bodies and roots with a denser shade than do trees of the same varieties in the Ontario and Canadian belts; much more than in Canada and the eastern states. There must be a cause for this. Nature does nothing without a cause. I think it is caused by the intense light and heat of the sun during the season of the growth of these trees. Leaves of plants must be spread where the light can act upon the sap and charge them with healthy chlorophyll. When light is deficient the stems and branches of the plants are drawn out, until the degree of light is reached, and then the stretching process ceases. On this account is there not danger of too much trimming in these belts?

The character and changes in our tree belts correspond almost exactly with the

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isothermal and rain lines of the state, showing so intimate a connection between them that the one can be read by the other. The climatic botanist will determine the belt in which he may be placed, as easily and quickly as the geologist can fix the strata of rocks around him.

Seeing that the native growths show such belts as have been described, another question deserves especial attention: Can the trees and plants of the Canadian and Ontario belts, which includes those of the states of New York and New England, trees and plants that require great moisture in the soil and atmosphere, with a less degree of light and heat than is found in these Michigan and Wisconsin belts, be made to flourish in the latter belts, particularly when they are attempted to be reared in an isolated condition? On a correct answer to that question more depends than would at first appear. If the answer be in the negative, then all our efforts at growing the evergreens found in the nurseries or in the woods, are worse than useless, because they end in failure. The same must be said of many other trees and plants, ornamental and fruit bearing, including the apples, pears and plums, that require Ontario or New York climate for their healthy growth. If the answer be affirmative, then we may hope to succeed with these plants and trees in these belts. But another question, perhaps more difficult of solution, must be answered. How must they be grown? That involves the whole subject of location, massing, isolation, trimming and mulching, to produce the proper conditions under which they can thrive. Here is the proper work for the horticulturists—the field of their observations. To them I must leave it.

I say nothing *ex cathedra*. What I do say on this point is mere opinion, surmise, ideas, theory, if you please, rudely digested; but it may be deserving a thought at least, if not farther investigation, because certain plants and trees are wanted in these belts, and can be had if the conditions necessary for their growth are secured. I believe they can be grown in the Wisconsin belt, but they must be massed, either in species, or with others. All must be kept clear of thatching grass roots, and so mulched that the water shall not leave the ground where it falls, nor be readily evaporated from the surface. Trees must be allowed to have thick tops that shall shade their trunks and roots. Without these they will not long survive. The foreign evergreens possess no advantage over our native trees in this respect.

For isolated trees resort must, in my opinion, be had to the Douglas spruce, the New Mexican fir, and the yellow pine of the Rocky mountains.

Prof. W. W. DANIELL'S of the State University, being called on for a paper on entomology, said that

Owing to the amount of labor on hand he had been unable to do as much as he could wished to have done, or even to write out a description of such insects as he had collected. In the intervals of his University labors, he had been able to collect about sixty specimens, consisting of larvæ and perfect insects; and he would be glad to have sent others for identification, from any part of the state, and if they reached him in proper condition he would preserve them, as he had done those he now presented before the audience. [These were contained in several boxes, and vials, and were for a time open to inspection, both before and after the Professor closed his remarks.]

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NAMES OF INSECTS.

1st. *Beetles.*

1. *Orthosoma unicolor;* Pine. Drury.
2. Yellow spotted Buprestis; Pine. Drury. *Trachypteris fulvoguttata;* Harris.
3. Marked Pine borer; male. *Monohammus titillator;* Fabr.
4. Female of the same.
5. New York Weevil. Apple and Hickory. *Ithycerus novaboracensis;* Forster
8. Common Locust Borer; *Clytus robiniæ;* Forster.
9. Striped Blister-Beetle. Potato. *Lytta vitatta;* Fabricius.
10. Ash-Gray Blister-Beetle. Potato. *Lytta cinerea;* Fabr.
11. Colorado Potato-Beetle. *Doryphora decem-lineata;* Say.
12. Round-headed Apple-tree borer. *Saperda candida;* Fabr.
13. Flat-headed Apple-tree borer. *Chrysobothris femorata;* Fabr.
14. Rose chafer. Rose, apple, grape. *Macrodactyla subspinosa;* Fabr.
15. American Currant-borer. *Psenocerus supernotatus;* Say.
16. *Dryobius 6-fasciatus;* Elm. Say.
17. Three-lined leaf-beetle. Potato. *Lema tri-lineata;* Olivier.
18. *Bleparida rhou.* Sumach. Forster.
19. Cucumber flea-beetle. *Haltica cucumeris;* Harris.
20. *Chrysomela cærulipennis;* Knotgrass. Say.
21. May Beetle. Roots of grass. *Lachnosterna quercina;* Knoch.
22. Museum Pest. Natural History specimens and Bacon. *Dermestes lardarius;* Linn.
23. Convergent Lady-bird. Larva, pupa, and imago. *Hippodania convergens;* Guerin
24. 9-spotted Lady-bird. *Coccinella novemnotata;* Herbst.
25. 15-spotted Lady-bird. *Mysia 15-punctata;* Olivier.
26. *Coccinella Munda.* Say.
27. *Coccinella.*
28. Tiger beetle. *Cicindela sex-guttata.* Fabr.
29. Common tiger beetle. *Cicindela vulgaris.* Say.
30. *Calosoma Calidum.* Fabr.

2d. *Butterflies and Moths.*

31. Eight-spotted Forester, Grape. *Alypia octo-maculata.* Fabr.
32. *Edema Albifrons,* Oak. Smith.
33. Locust Carpenter-moth; Red-oak and locust. *Xyleutes robiniæ.* Peck.
34. The Currant Ægerian. *Ægeria tipuliformæ.* Linn.
35. Southern Cabbage Butterfly. *Pieris protodice.* Boisduval.
36. Potherb Butterfly; Cabbage. *Pieris oleracea.* Bois.
37. *Eudamus tityrus;* Locust. Cramer.
38. *Deilephila lineata;* Turnips. Fabr.
39. *Vanessa Antiopa;* Elm. Linn.

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40. *Papilio Asterias;* Carrot and Parsnip. Drury.
41. *Grapta interrogationis;* Elm and Hop. Doubleday.
42. *Syrichthus oilus.* Linn.
43. Thistle Butterfly. *Pyrameis Cardui.* Linn.
44. *Ctenuca virguinica;* Grass. Charpentier.
45. *Arctia phalerata.* Harris.
46. *Colias Edusa;* Clover. Fabr.
47. *Attacus polyphemus;* Oak. Linn.
48. Milkweed Butterfly. *Danais archippus.* Harris.
49. *Colias philodice;* Clover. Godart.
50. *Argynnis bellona;* Violet. Fabr.
51. Virgin Tiger-Moth ; grass. *Arctia virgo.* Linn.
52. *Spilosoma virgenica;* general feeder. Fabr.
53. Tortrix Moth; larvæ feed upon the honey-suckle. *Lonicera.*
54. Cabbage plusia; cabbage. *Plusia brassicæ.* Riley.
55. Pupa case of 54.
56. *Thyreus nessus.* Clemens.
57. *Colias Cæsonia;* clover. Godart.
58. *Grapta comma.* Doubleday.

3d. *Ichneumon Flies.*

59. *Pimpla atrator.* Fabr.
60. *Ichneumon;* parasite upon currant borer—No. 34.
61 and 62. *Ichneumon;* flies.
63. *Ptermalus vanessæ;* parasite upon lavæ of No. 39.

64. Saw-fly; larva feeds upon willow.
65. Different stages of growth of common grasshopper. *Caloptenus femur-rubum.* Degeer.

At the close of the reading of this report, Mr. WILLEY offered the following, which prevailed, vis:

Resolved. That we see in the report of Prof. DANIELLS, on entomology, much labor and scientific research, and great value for this society; therefore we de reappoint Prof. DANIELLS as our society entomologist.

Mr. ANDERSON said that on his place he had planted a lot of evergreens, pines and spruces, and he had found on them in the early summer, a worm that seemed to commence near the terminal buds, and thence fed downwards, cutting in the bark and base of the leaves; and if left undisturbed, it would cut the entire length of the new growth, and thus destroy the shoot. It commenced its attacks as soon as the buds began to push, in the spring, and could be discovered by the deformed manner in which the sprout grew, with one side circled. They were very numerous on his trees. When the tree was suddenly shaken, the worms would spin down to the ground, and could thus be taken; but he would prefer to have some means of preventing their depredations, before they had ruined the trees.

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Mr. WILLARD said he would in such a case apply pulverized white helebore root to the trees; it was done by using a pepper-box, or by sprinkling the tree with water in which the hellebore was steeped.

Mr. MCAFEE would protest against the use of helebore in any form; it was a very virulent and deadly poison; and if any portion of it entered the nostrils, it produced an irritation, inducing severe and uncontrollable fits of sneezing, and followed by inflamation, and sometimes with fatal consequences. Equally injurious was Paris green, that had been recommended for the destruction of the ten striped potatoe bug. He said let the potatoes perish, but save the life of the humans, that were equally endangered with the bugs in the use of these poisonous substances. He would use instead, suds made from carbolic soap; if that failed, then try tobacco water; there were very few insects that could resist the last.

Prof. DANIELLS thought that a strong soap suds made with the carbolic soap, would kill the insects of which Mr. Anderson complained.

Mr. STEVENS said he had seldom failed with a use of the soap suds.

Mr. MCAFEE then read the following paper:

VEGETABLE PHYSIOLOGY—THE DEVELOPEMENT OF NEW TRAITS OF CHARACTER IN PLANTS.

From the seed, with its little germ-bud, amply supplied with stores of nourishing material, through all the successive processes of sprouting, leafage, extension, inflorescence and fruitage, there seems to be a cycle of development, an unvarying round of growth which, when complete, ends just where it began, namely—in the seed. And to the careless observer it might appear when we had once traced the developing organism, from its origin in the parent plant to the point where it reproduced its kind, that we had mastered the whole of its history, and that each succeeding generation would be but a repetition of the cycle of growth observed in the former generation. But such is not strictly the case, for it is observed that the different parts of many plants vary in form, color, and other characteristics, so that each generation presents peculiarities which establish its individuality; distinguishing it from every other individual of its race. These variations of plants are almost the basis and foundation of the horticulturist's art, for without them the choicest and best products of the garden, orchard and vineyard would not exist. If the laws of nature had made inheritance positive and perfect in plants, so that the child *must* be the exact counterpart of the parent, not only would horticulture as a science and art not exist, but the human race would not be in a better condition than barbarism.

Though it is foreign to the province of this paper to trace the connection between the amelioration of form and quality of the food-producing plants, and the advance in civilization and intelligence of the races of men, dependent upon them, it is but fair to call attention to the fact that just in proportion as any people devote themselves to bringing out and retaining improvements in their domestic plants, in that same proportion they will make progress in social science and the arts of domestic life, which contribute to the happiness of every individual. As horticulturists and

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philanthropists, we should thank Heaven daily that plants do vary, and that they thus become especially the subject of our care and study. From the king of fruits, the noble apple, to the king of grains, the wealth-laden maize, variation from the original type has been constantly followed by the appearance of new and better qualities, till now there is many a domesticated plant which cannot be identified with its wilding predecessor, so great has been its improvement. Why plants are disposed to vary may be answered when we can safely say how they exist at all—not sooner; but taking for granted that the possibility of variation exists as a characteristic of every plant, we may pertinently inquire what influences bring it about.

All of us, taught by our own experience and by observation, are ready to admit, that the force of *habit* is very powerful to cause a constant recurrence of any thought or action, which has been often repeated. Habit grows stronger and stronger the oftener any action takes place, till the power of habit is a more potent force, than the power of the will; as appears in the case of any habitual abuse of health—as for instance, the use of liquors, tobacco, etc. Now leave out of account the intellect, and consider habit as operating upon the organism simply, and we can easily conceive how plants may be as well the creatures of habit, as are animals. Say for instance, any plant grows in a particular form, if all conditions remain the same, every succeeding generation is more and more strongly impelled by the force of habit, which is growing upon the plant, to continue in that form, till with ages upon ages of this routine of repetition, that habit of growth is so fixed in the plant, that nothing short of a most violent shock to the constitution of the plant, can disturb its habit and make variation possible. Knowing that variation *is* possible, and constantly taking place in so many species of plants, and knowing, that by divers means we may increase the tendency to vary, it is but fair to conclude that those plants, which habitually come true from seed, and always present the same unvarying outline of character, are thus constant, because their long established habit of growth, has so far been too strong to be broken up by any vicissitudes to which they may have been subjected. But we dare not say that any plant will always, under all circumstances, remain the same without variation or improvement; for the disturbing cause may be now at work, and it may, by and by, overthrow the force of habit, and sports and variations result. The wild ivy in its natural state has, by ages of growth, under very nearly the same circumstances, accommodated itself to its position and appears, year after year and generation after generation, in the same form. Its normal habit of growth is from seed, self-sown, always in about the same soil, and under the same climate; any departure from this normal state is a violence to its habit; and any new condition, to which the plant may be subjected, may call urgently for qualities which the plant possesses only in a limited degree. The result of such changed conditions will be, sooner or later, to break up its steady habit, and the variations which occur will be such as to best satisfy the requirements of the new conditions surrounding the plant.

Among the conditions tending to break up a constant habit of growth, and induce variation, may be mentioned in the order of their potency: 1. Propagating by any other means than by seed. Such for instance as grafting, budding, layering, etc. No plant has ever possessed strength of habit sufficient to resist variation in its

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seedlings after it had for a long time been propagated by these various means of extension named above; and for proof of the truth of this assertion, it is only necessary to refer to the apple, grafted and budded for ages, and observe how extremely variable it is in its seedlings; the pear, the domestic plum and the peach, subjects of propagation by extension, are in the same condition, while the strawberry, raspberry, gooseberry, etc., long propagated by stolons and suckers, are also variable. 2. Hybridization and crossing will not only produce offspring with traits of both parents in different and varying degrees, but new traits, hitherto unknown, appear and continue to appear in seedlings for many generations after the cross occurred. 3. Changed conditions of soil, climate, culture and pruning, (both of top and root) no doubt have an influence toward producing new forms better fitted to the new conditions surrounding them. After an observable variation has once appeared, careful and persistent breeding to that form, for a long time, will no doubt tend to increase, and eventually to establish the selected improvement, unless some farther change of circumstances checks the growing habit and induces other variations.

The progress of the native wild plant upon its career of variation and improvement is analagous to the progress of the human race, from the barbarism, where the only aspirations were to satisfy the physical wants and animal passions, to a condition of civilization and enlightenment, where the social and intellectual wants of improved mankind are fully recognized. To cultivate a plant into variation is to semi-civilize it, and then to choose a desirable form, and breed that form carefully, till the variety becomes so far established, and its habit is so fixed that its new form will come true from seed, is to complete its civilization.

The first stage of improvement, the state of semi-civilization, wherein the habit of a constant recurrence of form is broken up, and the seedling is perfectly variable, is the condition in which we find our domestic fruits at present; the farther step of erecting the most desirable kinds into established breeds, remains to be taken, and should be taken as soon as may be; and for this reason, namely: that where propagation, by extension, is used to increase a desirable form of fruit, as it must be so long as that variety will not come true from seed, every remove from the parent plant, either by seed, graft, stolon, sucker or cutting, is an attack upon the constitution, and has a tendency to impair the vital force. These means of extending one plant or tree by a subdivision into many independent individuals, are not the ways nature devised for the reproduction of plants. Nature's way of propagation is by the seed, and the history of the favorites of the garden, orchard, and vineyard, which after years of artificial reproduction, have weakened down and become the subjects of many maladies, shows plainly that we cannot hope to maintain, for a great length of time, the constitutional vigor of plants, unless we shall grow them from seed. No doubt much care and much patience would be called for, in an effort to make any of our varieties of apples a permanent breed, coming habitually true from seeds; but that it can be done, all the analogies in both animal and vegetable life go to prove.

An extremely interesting case of the reproduction of a variety of the apple coming true from the seed, has come to the writer's knowledge while attending

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this meeting. It is as follows: The seed of the Black Gilliflower apple, planted by Mr. Peffer of Pewaukee, produced trees which all bear true Black Gilliflowers. A large number of seedlings were produced, and there was not any appreciable variation in the lot, all truely presenting the parent form. Here is a case which shows that the proverbially variable apple may breed true. Mr. Peffer thinks the result was due to isolation of the parent tree, so that crossing was not possible; even if this be the case, it still proves the force of habit in even the most variable of fruits, the apple.

But, until we have secured a *perfect* fruit, we must still strive after new traits, still seek further variations, hoping that better and better forms, and better qualities, may appear among our seedlings. This earnest hope for something better still, has been the motive power, which has kept our enterprising horticulturists planting seeds and rearing to fruitage, at great expense, the millions of seedlings, which disappoint by the thousand where they satisfy by the unit. It has come to be an axiom, that "no man knows what a fruit seed will bring forth," the whole matter of raising seedlings being regarded as a hap-hazard entirely, success only following the most careful efforts as a mere matter of chance.

Is is not possible to do better than this? Is there no way to call out any predetermined quality, so that our seedlings shall possess that quality? There seems to be the best of evidence that every plant, in the interests of self preservation, will make an effort to accommodate itself to any adverse conditions surrounding it. If it be removed to a more rigorous climate, its progeny, after several generations, bred under the new conditions, is found to be better adapted to the climate, than were the parents. Acclimatization, though perhaps not possible to plants propagated by extension, is no doubt possible to seedlings derived from seed grown under the new climate. To make a plant more hardy then, it is first necessary, that the rigorous climate be allowed to act upon the plant during its whole life, up to seeding; thus a call is made directly upon it, to produce offspring better able to endure; and next to continue to propagate from seeds grown under the stress of this new demand, upon the plant, and if the required change is not too great, for the nature of the plant to admit of, it will occur. Many experiments upon plants, originally not quite hardy in English and Scotch gardens, have proved the soundness of this doctrine. And if the demand for endurance, is thus answered, why may not the demand for any other quality, if properly made, be as satisfactorily answered? With our limited knowledge of vegetable physiology, we do not yet quite know how to ask a plant to produce seedlings, such as we desire; but it is to be hoped we may not always remain thus ignorant. One great point, however seems to be already gained, and that is, that an impression must be made upon the parent, to secure a desired change in the offspring; and in the light of that knowledge, our common practice of fruit propagation in the Northwest, is, to say the least, radically wrong. Either our climate or soil, or both, are unfriendly to our best fruits, and with the best of care, they frequently grow and yield unsatisfactorily. They need the new trait of hardiness, of power to withstand this unfriendly climate and soil. Can we ever hope to develop that trait by taking cions and sticking them upon roots or stocks which may be as tender as themselves? Plainly we cannot, for that cion,

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and the tree resulting, are only an extension of the parent tree with all its peculiarities, differing, if at all, from it, in having lost a particle of its vitality and endurance, by the unnatural method of propagation. But one way is open to us: the power of endurance may come forth in a seedling, from a parent upon which the call for endurance was made. To preserve chosen varieties, of course, we must graft or extend, as we have yet no established breeds; but the root or stock upon which the graft is set, should never be from any seed grown far away from the influences which the orchard tree must endure. No tree in Wisconsin should stand upon roots which sprung from seed raised out of Wisconsin; and as far as may be, every fruit should be native, "to the manor born," a citizen by birth; and then we may hope that the "hardiness" so dearly prized, but, alas, so seldom seen, may be a developed and retained trait of our fruits. No seeds washed from the pumice of the Jersey cider mill, should be good enough for a Wisconsin nurseryman to plant, for the chances are that the new traits, which were implanted in those germs by the Jersey mother tree, will be sadly out of place in a region, where the summer and winter lines of equal temperature have such a habit of crossing each other at nearly right angles as they do here.

By way of conclusion, it may be well to remark, that no claim to a well defined and complete theory, is set up in behalf of this paper, for the subject is so vast, and of so great importance, that a mere essay of such dimensions as this, can only touch a few of the most salient points, and if the hints and reasons herein, merely touched upon, shall be the means of provoking careful thought, and thorough investigation, the author will be abundantly satisfied.

THE EFFECTS OF STOCKS ON GRAFTS, AND GRAFTS ON STOCKS.

The reading of this paper gave rise to a discussion as to the influence exerted by the graft upon the stock on which it grew, and *vica versa*.

Mr. ADAMS noticed instances of apples grown on the thorn as a stock, that produced a thorny growth; while the same variety, on an apple stock, grew smooth; but at the same time the graft preserved an individuality, even where it had neither root nor top, as when an apple is set on a crab tree, and then another crab is put on the apple, the apple remains intact, though fed below and above by a crab. So the cherry may be worked between the peach and the plum, and the individuality of each remain plainly distinguishable. At the same time he conceded that there was an effect of the cion and stock upon each other; as was manifest in some trees being dwarfed when placed on certain stocks, and increased in size and vigor when grafted on others. Nurserymen would also recognize the difference made in the root by the action of the cion growing upon it; some would produce a mass of roots, and others would grow little or no roots.

Mr. WILLARD called attention to the marked differences produced by the varieties of pears upon their stocks; one variety would have stocks with three or more strong prongs, another would have a straight top root. and still another would have a mass of small roots. From his own experience and observation in the nursery work, he

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had become convinced that the cion did exert a peculiar influence upon the roots of the stock.

Mr. TUTTLE believed the cion had more effect upon the roots than the stock had on the tree.

Mr. PLUMB took the ground that the influence of the cion upon the stock was such as to completely transform the roots. He had observed this effect when the crab cion was grown on the apple stock. The roots would have all the appearance, color and form of crab roots, and, he believed, the hardiness of the crab; in fact they were crab roots indeed. But he was driven from this position by being asked if he should so operate on one of these roots as to induce it to give off a sucker or shoot, would that shoot be a crab, like the cion, or an apple, like the stock. He was compelled to acknowledge that the sucker would be an apple, even though the root had been modified by the cion.

REPORT OF THE COMMITTEE ON FRUITS.

The committee on fruits on exhibition at this meeting beg leave to report that they have made an examination of the fruits, and have found the following new varieties, viz:

1. A specimen of sweet apple for name, by J. B. Wilkins of Bellefountaine. The committee are not satisfied with it.

2. Some large greenish-yellow apples, by Chauncey Herman, which the committee do not esteem worthy of a name.

3. A large red apple, by the same, is the winter Pennock.

4. A yellow apple, from Milwaukee, exhibited by Mr. Peffer for a name, has received the name of Ortley.

5. A seedling, by Mr. Peffer, has been named the Willie.

6. A seedling by the same, from the Herfordshire Pearmain, which resembles its parent in appearance, not quite as good in flavor, but better than No. 5, and which should have a further trial, is not named for that reason.

7. A small red seedling, by the same, is of good quality; the tree is said to be thorny.

8. A number of seedlings from the Westfield Seek-no-further, by the same, have been examined and are passed for further trial.

9. A seedling of great beauty, called the Woodland, was exhibited by J. C. Plumb.

10. A sweet apple, by H. H. Greenman, of Whitewater, for name; quality fair, good keeper. This may prove to be Downer's Winter Sweet.

11. A small red apple, too small, but of good quality. and may prove a good cider apple; no name given it.

12. G. J. Kellogg of Janesville, exhibited six varieties of apples, among which was the Ben Davis; also a sample of the Delaware grape, perfectly sound, though shrunken.

13. G. P. Peffer exhibited twenty-five varieties of apples, among which were the Jonathan, Swaar, Newton Pippin and many other choice varieties, including apples two years old; also a large collection of his own seedlings, including the Pewaukee,

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which received the premium of this society two years ago, and which still holds its high standing for fruitfulness, hardiness and quality.

14. A large winter Siberian seedling, larger and a better keeper, and of finer quality than the Marengo, and which first fruited this past summer, was shown by Mr. Peffer, and is recommended for further trial.

15. Professor Daniells of the University, had some large apples for name; they proved to be the Vandervere Pippin.

16. O. S. Willey laid on the table a large number of varieties, which were taken from the tables at the fall exhibition. Some of these were very fine specimens, and we especially notice the Gilpin, one of our most valuable late-keeping apples, and which the reports show to be hardy in this state.

17. A. G. Tuttle of Baraboo, showed a large number of apples, among which we noticed three very fine specimens of the Walbridge, which promises to prove one of our best late-keeping apples. He also had some finely kept grapes, including the Delaware, Wilder, Agawan, and others of Rogers' hybrids.

18. J. Swanson of Madison, had fine specimens of the Yellow Bellflower.

19. George Robbins of Mazomanie, exhibited nine varieties of apples, among which were the Ben Davis and Red Canada, which Warder ranks among the "best" of apples; also one seedling, well kept and good for cooking.

20. Seedling crabs, large and good keepers, were shown by A. R. Whitney.

21. W. M. Bartholomew of Lodi, exhibits thirteen varieties of apples, among which are the Willow, Rawle's Janet, very fine indeed, and Winesop; the whole form an excellent collection.

22. J. J. Davis of Iowa county, had apples for name, which are the Winesop and Rawle's Janet.

23. Five varieties exhibited by the Milton Farmers Club, including the Esopus-Spitzenburg, all fine specimens.

24. A Bethlemite, smooth and fine, by J. C. Plumb of Milton.

In conclusion, we beg leave to notice a model for a frame, with glass, presented by C. H. Greenman of Milton, designed to aid in the out-door propagation of the vine, and which seems to your committee to possess such decidedly novel and valuable ideas as to deserve a special notice, and to commend it to the attention of propagators of vines, currants gooseberries, etc.

Signed by the committee, D. W. Adams, I. J. Hoile and J. T. Stevens.

PAY OF THE SECRETARY, ETC.

Mr. TUTTLE offered a resolution, which was carried, that the Recording Secretary be allowed for preparing the Transactions, and other services, one hundred dollars a year.

On motion of Mr. HOILE, a vote of thanks was passed to the Librarian of the State Historical Society, for the use of the rooms for this meeting.

On motion of Mr. KELLOGG, a vote of thanks was also tender-

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ed to the officers of the several railroads, for passing the members of the society over their roads at reduced rates.

Mr. HOILE offered the following, which was adopted, viz:

Resolved, That the thanks of this society are justly due to the editors and proprietors of the *Western Farmer* for the very many favors we have received from them in the past; that we recommend to our professional men that they give them their advertising patronage as much as possible; and further, that we continue to recognize the *Western Farmer* as the official organ of this, the State Horticultural Society.

Mr. WILLEY presented the following, which was adopted:

Resolved, That the Treasurer be instructed to invest the funds remaining in his hands belonging to the State Horticultural Society, in U. S. bonds (using his discretion as to the series), or so much of the same as may be left unexpended after paying bills now due or accruing after this present meeting.

Mr. MCAFEE offered the following, which prevailed:

Resolved, That we deem it the duty of every live horticulturist to acquire a fair knowledge of botanical science.

Adjourned to 7½ P. M.

THURSDAY, 7½ P. M.

G. E. MORROW read the following paper:

SOME WORK FOR HORTICULTURAL SOCIETIES.

The design of a Horticultural Society, I take it, is the advancement of horticulture—the collection and dissemination of knowledge about, and the inciting of interest in the art. The placing on record, year after year, that a horticultural society exists at a given place; that certain worthy gentlemen have been elected as its officers; that it has a large membership; that it has a handsome fund to its credit; the holding of annual meeting to elect officers; the holding even of one or two exhibitions in the year—none; nor all these things, constitutes the full work of a horticultural society, state or local. Horticulture, in its general signification, is the culture of gardens. Not fruit growing alone; not flower culture alone; not vegetable culture alone, but all these, and, scarcely straining the proper definition of the word, the adornment of our home grounds with shrubs and trees; the whole range of landscape gardening, and even the great question of forest culture appropriately belong to horticulture and claim attention at the hands of horticultural societies.

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There are many thousands of homes in town and country about which no fruit nor ornamental tree, nor shrub, no clambering vine, no flower grows; many where no tree of any kind spreads its foliage; many where even the green grass struggles for life under the trampling of animals, the rolling of wheels, or the thickly piled rubbish, freely allowed at the very door; many where misdirected expenditure of time and money has only given dead or dying trees, with no hope of beauty or profit; many where patient culture of fruit trees and vines for years has resulted only in disappointment; hundreds of school houses, churches, and cemeteries, standing bleak and bare by the roadside; very many villages where no effort has been made to line the streets with trees; scarcely anywhere any provision has been made for parks or pleasure grounds; a state still feeling the effects of past mistakes in fruit culture, and of the frequently expressed opinion that successful fruit growing is impossible in it, such is the field in which our Wisconsion horticultural societies are to work. Not an inviting field in some respects, yet with only the discouragements common to nearly every new state, and one with many encouragements. No state has more energetic and enthusiastic friends of horticulture; few, if any, have more energetic and progressive horticultural societies than are some of ours; and against the unfavorable examples named we may set many homes almost models in this respect.

By careful trial and experiment to select from the long lists of the old and the rapidly increasing lists of new varieties of fruits, those which can be successfully and profitably grown here; to secure not only hardy varieties, but those having the highest attainable excellence; to decide on the best modes of culture—when this has been done to give the knowledge gained to every land owner or occupier in the state, and with this knowledge to give that interest in the subject which shall induce each one to apply it in practice; to give to every resident of the country, especially, that amount of stimulus in this matter that shall induce him to at least supply the wants of his own family in fruits and vegetables, and thus add to their health and comfort: to induce residents of country and village alike to care for flowers, though their value cannot be counted in dollars, and to see to it that every home has at least some well kept green sward, a few flowers and shrubs, and, if space permit, ornamental and fruit trees; to so educate public sentiment that every school house, every church, every cemetery shall be ornamented with some living thing of beauty; that every village shall have trees along its streets—to see to it that every resident of this state, living where nature will allow the growth, shall have fruit, vegetables in abundance for his eating, and flowers, shrubs and trees around him—such and more is the ideal work of our horticultural societies. We may not hope to reach the consummation of this ideal in a generation, perhaps never, but we can do something towards it. How best? is a question we all would like to have definitely answered. I cannot do this; can only hope to suggest some things which we may do well to keep in mind.

Many of our societies may wisely extend the field of their work. Naturally, probably wisely, this society, in common with most others, has been rather a pomological society, than a horticultural society in its broadest sense. All honor to the nurserymen and fruit growers who have built it up to its present position. They

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deserve the thanks of the people of the state, and have done a great work. But with their present position and strength, cannot increased attention be given to flower and vegetable gardening, ornamental tree planting, and home ground decorating generally? All of these should receive attention it seems, just so far as it is practicable to give it. Fruit first, these as rapidly following as may be. So of the local societies. By the encouragement of the formation of local societies and endeavoring to excite an interest in horticultural matters on the part of agricultural societies and farmers' clubs, this and existing local societies may do much to aid in the general work. We must keep the importance of the subject before the people, and the existence of an active horticultural society in any vicinity cannot fail to have a stimulating effect in addition to the good it may do in other ways. With a horticultural society in every county and in every village of considerable size in the state, the state of the public feeling and interest in horticulture would be vastly better than now.

The annual meetings of this society have done, and will continue to do, incalculable good; the information collected, the fruit lists carefully prepared and recommended, when sent all over the state by means of the press, has exerted, and will exert a powerful influence. Every friend of the society and of horticulture will rejoice at the growing interest in and increased attendance at, these meetings, and the increasing number of able and practical papers and valuable discussions at them. The plan of holding these annual meetings in different portions of the state, with some admitted difficulties, promises some important advantages over the present plan. In the nature of the case it would be impracticable for the state society to meet often, but the local societies should meet, it seems to me, at least every month during the year, and these meetings should be for discussions, and the reading of papers. The mere fact that these meetings are held will do good, and men interested in horticulture cannot fail to learn some thing by discussion. The annual exhibitions by the state society, brings the fact of horticultural success most prominently before the people of the state. That this may reach the largest number, I think the plan of holding the exhibition in connection with the State Agricultural Society is decidedly best. Exhibitions by the local societies are essential to their highest usefulness, and do much in the way of stimulation and in improvement of taste. The local societies should, it seems to me, invariably establish a library for the common use of the members. This serves as a bond to hold the society together as well as furnishing each member with sources of information, he may not feel able to supply himself with. While an ordinary library for reference would be of little advantage to the state society, it is important that a library should at once be established, with especial reference to collecting and preserving the reports of similar societies in other states. In a few years, reports we now regard as of little value, will be more and more sought after with interest, and a century hence, if not of practical value, will be objects of much curiosity. By exchanging our own reports for others, the nucleus of a large and valuable library may soon be collected. One work which has always received much attention at the hands of this society and should receive more from the local societies generally, is the recommendation of fruit, vegetable and flower lists. I need not go over the question; you know the

J.—Hor.

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difficulties and you know the advantages. While the state society can commend no list equally well adapted to all parts of the state, it does wisely in cautiously recommending varieties that do well generally or almost without exception, for trial. The local societies, collecting the local experience, should supplement this work, and modify, add to or take from the state lists, as may seem necessary. The local society ought to be able to give clear and positive advice as to at least a few varieties of each of the fruits that thrive in this state, and if, from local causes, some varieties recommended by the state society will not succeed, it should say so, and thus, if varieties not recommended by this society, do equally as well or even better, let the local society say so; not allowing the farmers and others in the vicinity to work blindly.

The introduction of so many new varieties of fruits and vegetables presents a difficult yet important field of work for horticultural societies. From new varieties we hope much. Doubtless, in hardiness especially, seedling fruits will be produced here that will be of very great value. But the large majority of new varieties introduced prove valueless, or at least in no way superior to those already well known. The cause of horticultural improvement is injured; money is lost by many ill able to bear it; and, equally important, years of time are also often lost before the failure is fully proved. The societies should encourage experiments in this direction, and should aid and commend the introducer of new varieties of value, and they should also discourage the introduction of any variety which does not give positive proof of actual value, nor the premature dissemination of any variety, however promising. The societies can take no legal action in the matter, and I would not go to the extreme advocated by some, but they should certainly urge the proprietors of any new variety to have it tested by them and introduced by their sanction; this would be for the best interest of all concerned. The public will have greater confidence for the recommendation of the society. The introducer of really valuable things would secure increased reward, while many honestly believing they have superior varieties, would be spared the consequences to reputation and future profit, of sending out an untried and inferior variety. The plan of encouraging the introduction of new varieties by the granting of patents for them, I regard as utterly impracticable. The societies, however, can do much to encourage and cause reward to such men, as well as protect the public from loss, intentional or undesigned.

The horticultural societies should, it seems to me, strongly discountenance the common practice of substitution of varieties by nurserymen; I need not point out its injustice and evils. The welfare of the cause, and the reputation of the really deserving, demands that the societies should take action. or manifest in some way their disapprobation of numerous "tricks in trade" among some western nurserymen, which bring reproach on the class and injures the business of all.

I trust that I shall not be thought to be unduly magnifying my calling when I call attention to the importance of horticultural societies encouraging the more general distribution of horticultural periodical literature. I only ask that you believe I am not speaking in the special interest of any one paper alone, but in behalf of the class which has done much for horticulture and for horticultural societies. Here, in the northwest, where we have to complain of the lack of interest among the masses as

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to horticulture, it is difficult to induce many of those whom we most want to reach, to buy horticultural books or even periodicals devoted solely to horticulture. For such I believe the agricultural papers, with their horticultural departments, are the most effective means through which to communicate information and to excite interest. Take this meeting as an example; 100 persons perhaps will listen to its proceedings and be profited thereby, and they may communicate something directly to others, a greater good from this meeting comes from the publishing of its proceedings in the report of the society; very valuable to those who can receive it, when issued promptly; but the publication of these discussions and papers and the lists recommended, in the agricultural papers, will most promptly and most effectively bring the matter before a larger number. Not only this, but in the communications of practical fruit growers, and other horticultural mattter throughout the year, these papers are of undoubted value. No respectable agricultural or horticultural paper of the east, and certainly none published in the northwest, but is an aid to horticultural advancement, a fellow-worker with the societies, in the aid of which they gladly do what they can. The general press is also an important help. In their briefer summaries of these meetings they do much, and a brief statement of what this meeting has done, inserted in every paper in the state, would do much for the society and for the cause of horticulture. The local societies should, as one of their modes of usefulness and surest guarantees of success, see that the local papers are furnished with prompt and accurate, though brief reports of their proceedings.

GEO. J. KELLOGG of Janesville, then read the following, viz.:

SELECTION OF VARIETIES.

The location of the orchard is of first importance, but hardly second to it is the selection of varieties. It matters not whether it be for family or market; both are alike important. What shall we set before our families, our little ones, our friends? What will be most conducive to health, and consequently to happiness? What will enhance the pleasing recollections of home, where the young heart fondly cherishes its favorites, and in after years wanders back to the time when those Pippins and other favorites were so luscious; times never to be forgotten; when the youthful appetite lent new charms and a keener relish to its enjoyments?

Too much care cannot be used in the selection of varieties for the family. Suppose you have a peculiar taste, and don't like any sweet apples; do you suppose your orchard will die when you do? And so with other varieties.

For family use there should be a succession, the year round; there is hardly an orchard, which furnishes such a supply, but there will be some weeks of scarcity during the twelve months.

Plant such varieties, and the best, that will give the necessary and successive supply; and if the severity of the climate will not allow the tender kinds to grow on their own stems, many of them will do well when top-worked on the hardy varieties, and will pay for the cost and extra care taken to produce them. If you had an old favorite in your boyhood, you should now send for some of the cions by mail; it may have been known to you under a local, or its true name may not be known

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to others or to yourself; it may have been a seedling, perhaps worthy, or with your now cultivated taste, may be worthless, and so you will be disappointed when you see it again; still you had better get it for trial. Spare no pains in selecting a good and wholesome list for the use of your family. It will not be safe to go far from the recommended lists that succeed in your own vicinity. Location has much to do with varieties, so do not try everything. Look about you and select such as are doing well, and leave the others. If you are not sure of getting those particular kinds, of some reliable nurseryman, any tree peddler you meet, will undertake to furnish them. They sell everything, or say they do, until the tree comes into bearing; perhaps, there will be some then. But to be sure, go to the nearest nursery and get what you want, or get the cions and graft them yourself. Any fool can graft, if he knows enough.

After what I have said, I would caution against too many varieties. Do not exceed fifteen or twenty sorts, for there will be care in keeping and disposing of the surplus. Three early, three fall and six winter sorts, if of the right kinds, are sufficient. It would be useless to present a list of these; for we cannot, as horticulturalists, agree on only five varieties. Act therefore on the motto: Look about you and select the best you see.

The next paper was read by J. S. STICKNEY of Wauwatosa, president of the society, on

HORTICULTURE FOR FARMERS.

When the love of good fruit is so general, why is it not more abundant? When the value of trees for ornament, shade and timber is so apparent, why do we not plant more and care for them better? When beautiful flowers add so much to the innocent pleasure and happiness of our homes, why is there a home without them? There must be reasons and also remedies for these failures. To learn the one and apply the other is worth our honest efforts. True our climate is not all we could wish it to be, but complaints from us will be in better taste after we have fully accomplished all that our climate favors. True our nurserymen and horticulturists, and our State Horticultural Society might have done more to encourage and direct us, but we must remember that they have had many obstacles to overcome, and as all give evidence of now being alive and in earnest, let us assist with equal zeal. Without further considering these outside influences, let us look directly at home, holding ourselves responsible for whatever is less than it should be. A brief review of our short comings, if not exactly pleasant, may help us to make better progress hereafter. Let us who have lived ten years in our present homes consider what those ten years should have enabled us to do, with the best use of means actually within our reach. The seeds of that bushel of apples which we bought and used ten years ago, if planted and cared for, should now he represented by ten acres of bearing orchard, whose fruit, in favorable seasons, should bring one thousand dollars. Is there such an item in our farm account? If not, we have lost something by neglect. If our farms lack timber or shelter, one bushel of black walnuts, to to he gathered in an hour, or bought for a dollar, would, with proper treatment for

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the past ten years, have given us lines and groves of trees that we would not sell for one thousand dollars. Are these on our farms, or are they still to be grown? One hundred evergreens, costing ten years ago fifteen to twenty-five dollars, would now average fifteen feet high, making our homes models of beauty, and protecting them from many a wintry blast. Are the evergreens there, or do the piercing winds constantly remind us of their absence? Many smaller items of similar import will readily suggest themselves to your minds. Some of these things are doubtless lacking. And now comes the question, shall we still drift on in the old way, or shall we make an earnest effort to improve? The presumption is that all are anxious for improvement' therefore let us consider what are our best means of progress.

These horticultural matters need thought and study to make them successful. The leisure of winter is a good time to study and plan, and that these plans may not be forgotten, it is well to make notes of them, that shall bring them seasonably to mind. Much valuable aid may be gained from the excellent horticultural and agricultural papers now so abundant, and much by observing the work and progress of others. We also have books treating very fully upon flower, fruit and tree culture; but with all these, great and real progress can only be made by our own practical experiments. These, aided by reading and observation, must be our teachers; and even our failures may teach valuable lessons. Agricultural subjects will of course be first in importance with the farmer, and the suggestions I may make will be such as I feel sure will be no hindrance to other interests, and if carried out will yield rich compensation pecuniarily, and add largely to the comfort and happiness of farm life.

The things to be planted, and their arrangement must necessarily be somewhat different on each farm, and it will greatly aid in deciding just what we would like to have, just what we can afford to have, and just where to place each particular tree and plant we must make a full and complete map of the farm, as accurate as to proportions as practicable; then study it carefully. Go also to different points of observation outside of your farm, and study the farm itself; consider where to place trees for ornament or shelter, that they may add most to the appearance, or afford most needed protection; if timber is needed, decide upon the ground best adapted or that can best be spared for that purpose; in short, make of it in imagination a model farm; just what you would wish it to be regardless of expense. If you do this earnestly, with your heart in the right place, the chances are that you will see beauties and good qualities never before discovered, and that your farm will rise in value enough to pay for large improvements. Next decide how much of this plan you have the means and ability to accomplish. Let your plans for planting extend through a period of five to ten years, allotting to each year its particular work; then you are thoroughly organized for business, and when your plans are carried out, the whole will be harmonious and beautiful. At first your progress may seem to be slow, but as each year adds its growth to the trees already planted, you will be astonished at the results, and wonder how so much could be so soon accomplished and with so little cost Perhaps, also, there will be a feeling of regret, that the beginning had not been made five or ten years earlier.

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Ready means to buy just what you need and of as large size as is profitable to plant, will of course hasten forward your work, but without this you need not hesitate. Very little money will answer, and more of skill and labor will get you on almost as fast. One very good way is, after deciding what will be needed for five years' planting, to buy all of these of small size at wholesale prices and plant them out in nursery form in well prepared soil; then transplant to their proper places as size and time will warrant. Such trees suffer little in transplanting and cost but a very small outlay of money. Growing from seeds and cuttings requires still less of money, but more of time and skill. Perhaps the better way is to commence planting with larger trees, and at the same time start these miniature nurseries for future planting. The younger members of the family may be led to take great interest in these nursery trees, and if cared for and grown by them, they will not lose their interest, as both trees and children grow older.

In all we do, we should start with the firm resolve to do everything well. And the very foundation of this consists in deep and thorough preparation of the soil before planting. No amount of after culture will fully compensate for the lack of this. Choice of soil and aspect is also important. In fruits, all like a deep loam, but perhaps this is most essential to pears. Give grapes a southern slope, the warmer the better—high and dry. For most trees this southern aspect is about the worst, as they here get too sudden changes from cold to heat, and start too early in the spring. Give everything thorough drainage; nothing desirable will grow or remain long in health with stagnant water about its roots. Currants, gooseberries and raspberries can best bear some shade and moisture. While we would do everything practicable for the good of our trees, we must remember that it is possible to "kill with kindness." We must be sure that our young trees are not made to grow too late in autumn. They should cease to make new wood by August 15th to 30th, and expend their remaining energies in thoroughly maturing and hardening up the wood already made. Otherwise the first frosts will find them soft and tender, and they will surely suffer. The proper treatment is to cultivate well, early in the season, and not stir the soil later than about August 1st. Trees, both in orchard and nursery, that grow too late, should be stopped by pinching off the young points.

The safest guide as to what varieties to plant, is to carefully examine the orchards in your vicinity, and plant such as you there find doing best. This is a matter of great importance, for in almost every orchard you will find three or four kinds actually producing more fruit than all the others. Six to ten kinds are all that are desirable for profit in any orchard. As a rule, two or three year old and four to six feet high is the best age and size to plant. Always prefer low heads. Such trees will grow better, bear earlier and live longer. An excellent practice—but one often neglected—is to protect the south side of the body of the trees, the summer after planting, and for several winters following, with straw or other material, from the sun. In summer this guards against excessive heat, and in winter against sudden changes when we have freezing nights and warm, sunny days.

Small fruits yield the most immediate returns and should receive their full share of attention. First in season are the strawberries, and they come at a time when we are all hungry for something fresh and new. They find a hearty welcome when

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placed on our tables, even though it be three times a day. During the strawberry season I daily see my farmer friends taking home their quart or two of berries from the market, and I feel like asking them to stop and explain how it is that, instead of these occasional quarts of stale and injured fruit, they are not daily using from four to eight quarts of much finer quality, grown in their own gardens. Certainly it cannot be because the good wife would object; nor because the children do not like them; nor because they are unhealthy. It would be unsafe to hint that men lacked either the knowledge or force to supply this need if they thought best, still there must be a cause for the general neglect of this and the other small fruits. Of course the larger interests of the farm must not be neglected; seed time and harvest must be promptly met and provided for; The farm stock must receive daily and careful attention; but there still should be time to attend to things that yield us so much comfort and luxury as do these fruits, and there should also be a spare hour, in which our thoughts might rest from the question of dollars and cents, and go pleasure seeking among the beautiful flowers and noble trees. These are called little things; and so are our lives made up of little things. If heretofore these have been neglected, let it be so no longer. Make your plans now for a garden, if only of ten or twenty square rods, in which you will grow all the small fruits in their season, and a variety of flowering shrubs and plants. Decide now upon the number of plants of each you will need, and take measures to procure them seasonably. Old and common varieties will do very well, probably give you more of success and less of disappointment than many of the newer kinds. Make a good beginning with these, and try others with moderation, increasing the quantity as you prove them worthy. Material for quite a start may usually be found in the currants, gooseberries or raspberries, standing neglected in fence corners and by-places, replant these into good soil, and cultivate them well, and see how astonished they will appear, and how they will astonish you, with large, luscious fruit, that you never believed them capable of producing. Wilson, Green Prolific and Russell strawberries; Miami and Philadelphia raspberries, also Brinckle's Orange and Franconia, with winter protection; White and Red Dutch, Cherry, Black Naples, White Grape currants; Houghton and American Seedling gooseberries; Concord and Delaware grapes; all these you may plant with the assurance that they will not disappoint you. You should also plant a dozen or more roots of Linneus, Victoria and Mammoth pie-plant and one hundred or more roots of asparagus. One thousand strawberries, two hundred raspberries, one hundred currants, twenty-five gooseberries, and twenty grapes, will give a good supply for any family. If you plant much less you will doubtless come short of some things. For easy and thorough cultivation it is well to plant all in rows, so as to do most of the labor with a horse and cultivator or plow. If it is all to be done by hand, it is sure to be neglected at times when farm work is pressing, and neglect, if not fatal, will destroy most of the profit, and all the pleasure.

The flower department requires but little space, and must receive careful hand culture. Our old time friends, the lilacs, snowballs, &c., are easily procured and always grateful for the care bestowed upon them. Pæonies, phloxes, dicentras and many others, when once planted, need but the simplest care; these, with a small assortment of roses, a few bulbs, dahlias, and a sprinkling of annuals from Vick or

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Bliss, will make the flower garden an object of beauty from early spring to late in autumn. In the orchard, the better varieties of Siberian crabs are worthy of a place, because of their early and constant bearing, and the excellence of their fruit for preserving, etc. If practicable, let apples, pears, plums, and cherries be planted in separate blocks, so that each may receive the peculiar care which its wants require.

What shall we plant for shade and timber? I answer, plant largely of evergreens, particularly of Norway spruce, and white and Scotch pines. At least one hundred of these should be growing on every farm. The European larch is now receiving much attention, and I believe it is worthy of all the praise it gets. It is very rapid, growing, in ten to twelve years, to twenty-five feet high and one foot in diameter; it is also very durable. Young plants are abundant and cheap, and those needing timber cannot do better than to plant them largely. Wet soil does not suit them, but they thrive on dry and even poor land. Three feet each way is the distance recommended by the Illinois planters, thinning out ultimately to twelve feet each way. Our native maples and elms are, perhaps, our very best street trees. Black walnut and white ash are valuable and rather free growing timber trees; if nothing else is accessible, cottonwood, poplars and willows can readily be grown from cuttings, and will be far better than none.

In this brief essay I have not aimed to treat anything fully. To give all a fair showing would require a volume; my only hope is to awaken in some minds an interest, which shall lead them to think and read upon the subject. If once fairly interested, they will put the knowledge they gain into practice, and tree planting once earnestly begun, is not soon given up. If some should become so interested as to form tree-planting associations, embracing neighborhoods or even whole townships, and offering premiums for the most extensive and successful planting, great good would result; and the trees so planted would in time become proud monuments to the memory of those who planted them. Always remember that in horticulture, a spring season lost, is a year lost. If the work herein laid out is so great as to discourage, don't give up all, but plant something. Half a dozen apples each year will in time give you fruit. A single elm, planted by the roadside, will be a landmark for you in later years.

Make good use of the knowledge you have. Seek more light in horticultural books and papers. Join our horticultural society; attend its meetings and report your progress. Plant trees and encourage others to plant, until the best of apples are abundant at fifty cents a bushel, strawberries and raspberries at six cents a quart, and grapes at five cents a pound. Verily that will be a happy time for the poor, and bad whisky and tobacco will have fewer friends than now. "So mote it be."

The secretary then read the following, written by C. ANDREWS of Marengo, Illinois:

ORNAMENTAL TREE PLANTING.

Among all the objects of nature which appeal to man's sense of the beautiful and the useful, trees stand preeminent. Their majesty of form, grandeur of foliage,

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diversity of outline, and subtlety of shades and colors; their airy and delicate beauty while young; their elastic, luxuriant growth and yearly increase; their vernal verdure and autumnal tints; their fortitude and fellowship, even in winter, when shorn of their leafy charms; and even their venerable picturesqueness when in decaying age—all afford phases of beauty and interest which strongly impress the mind and character of man. Trees are objects of interest in every situation. On level ground they break up the monotony; on mountains they clothe the otherwise bare and rugged surfaces; on hills and in the valleys, along the margins of streams and borders of lakes, they add a rich and varied charm to the landscape; singly or in groups, in solitude or surrounding the abodes of man; in the dewy morning, glistening with myriad gems; at sultry noon or sombre twilight, when shaken with storms or whispering in the gentle breezes; everywhere and at all times, they give life and animation to every scene, and render the earth vocal and vivid with thoughts of the Infinite. The fullness and richness of our wooded flora presents so great a variety of species, and such a diversity in size, form, shade, color, leaf, twig, branches, spray, bark, buds, blossoms and fruit, as to afford an almost unlimited choice in the selection, and skill in the arrangement of artificial planting. Here begins the province of cultivated taste, in their employment by man as objects of use and adornment, about our homes, along our highways, and in the embellishment of public grounds.

The first fixed, definite landmark of civilization, is the permanent house or home. The rude habitation of the pioneer, affords a sample of the incipient architecture of the civilized home; built of logs, with a chimney of poles or sticks cemented with clay, and placed on the outside of the main structure. The first improvement will be found in this appendage being built of stones or bricks. The next, perhaps, the house is built of frame and boards, but from habit or lack of ideas, the chimney is still continued on the outside of the house. And even when wealth and refinement had taken the place of poverty and rudeness, the chimneys of costly mansions were for a long time, and in some districts, may still be seen partaking of the same primitive style of architecture. Our modern builders smile, and well they may, at the rude ideas which originated these relics of a past period in their art.

We refer to these gradual developments in the architecture of the home, in order to show the analogy which exists between them and the still more backward condition of the art which is the subject of this essay. The surroundings of the home are quite as significant and eloquent in their indications of the intellectual advancement of its occupants. In these appurtenances to the dwelling, which civilization has made at once a necessity and a token of her progress, we behold the same gradual advancement from the rude and primitive practices of the pioneer to the elegant arrangement of the cultivated landscapist. We write more especially for the benefit of country homes, but there is still no end of room for improvement in the surroundings of our town and suburban residences. In fact, it requires but little observation to see that this branch of education is further behind the age than that of architecture or almost any other department of scientific culture. Those arts which depend upon mathematical exactness have progressed much faster than those which depend more strictly upon the developement of the æsthetic intellect

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Even pomology, and others of the more abstruse modern sciences, have been to a graat extent fostered by the direct profits to be derived from them; but the cultivation of the beautiful in moral life occupies a position in which profit has not been a leading consideration. It is really one of the fine arts. Yet, strange to say, it has always been considered a secondary one, while in fact, as an exhibition of rural taste, it should take precedence of all the others. For what can be more inappropriate than a display of fine paintings, statuary and literature in a rural home destitute of all landscape adornings? Yet such anomolies are often met with. While we should, as far as possible, rise above the gross calculations of profit, yet these are among the considerations which may justly be taken into the account. The home that is appropriately embellished, according to the rules of correct taste, acquires an increased money value; although beauty, in its abstract form, cannot be weighed in the vulgar balance of trade; yet it has a market value. A fine landscape view is seldom put down as an item in the value of a farm, yet the purchaser is often unconscious of how much he pays for what may be to him an intangible merit.

It should be the mission of horticultural societies and of our state universities to foster and to create this sentiment of rural beauty, both in its higher aspects of moral refinement and in that of its practical bearings upon the property and welfare of the commonwealth. To what other organizations shall we look for the initiatory instruction so much needed by the populace? Every state and local society should have a standing committee on rural art and rural taste to prepare essays, plans and diagrams and matter for discussion and to report progress in this department. And no state university or other college can be complete without its chair of landscape gardening. Although it requires peculiar advantages and a high order of talent to become a proficient in this art, still there are certain general principles of improvement and correct taste, that may be acquired and practiced by all; and there are also certain general mistakes and absurdities, popular errors and whims, which a few hints may enable us to avoid. These relics of the dark ages of Dutch taste—horrid reminders of the medieval midnight of the human imagination—which still linger in our midst and stare at us from almost every village door-yard, should be pointed out and exposed. Such crude ideas and rustic notions, born in the backwoods of civilization, as we daily see, must first be removed either by example, argument or ridicule, before a more rational practice can succeed them. The first grand principle in this art must always be to copy nature as closely as the uses or objects sought will permit. In planting an orchard, for instance, straight rows and rectangular figures are appropriate, because essential to cultivation and gathering the fruit. But this is the least ornamental form in which trees can be planted, because it does the most violence to nature's plan. And yet this is the very form which ninety-nine per cent. of planters adopt in ornamental (?) planting. One cause of this unnatural practice is doubtless to be traced to that primitive condition of things when man wished to escape as much as possible from the wildness of nature. He had seen too much of nature already, and wished to see something artistic about his home; in short his principles of ornamental planting were drawn from the rules of the architecture of man, and not from the architecture of "God's first temples,"

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the groves. This desire to substitute science for nature led the pioneer, after he had, with sturdy blows, cut away and burned up every vestige of the original forest, to select from the nursery, trees of the most formal character he could find, and plant them "in pairs," matched in size if possible, on each side of his front walk, at exact and regular distances therefrom, In order to give them the most "artificial" and "geometric" appearance possible. This, in his estimation, was "art improving upon nature!" And this arrangement, he is very apt to carry out even after he has become rich enough to abandon his cottage and erect a mansion. The same straight front walk, the same stiff trees "in pairs," only more of them, making perhaps a long straight avenue from the house to the public road; an arrangement, just about as ornamental before a handsome house, as a shaker bonnet on a beautiful woman. Distance may lend enchantment, but good taste would dictate a different style. Even the beds and borders for flowers, the roses and the shrubs, in this geometric school of gardening, are made to follow this odious pairing system! We would not have our readers imagine that we are opposed to "pairing" altogether. By no means. It is doubtless a delightful arrangement for the inside of the home; and the more exactly the pairs are "matched" the better. But human beings are capable of locomotion, and are not forced to stand *vis a vis* with their partners for a whole season. Then why should we impose this unnatural and unpicturesque position upon our pets of the lawn and shrubbery? Good manners and good taste alike condemn constraint. Plant trees in such relations to each other as to make it appear the result of their own choice, or nature's choosing, and not of the awkward and arbitrary, we might say, cruel will of an ignorant tyrant.

We are aware that without definite instruction it is difficult to leave the beaten track. A straight line is more easily drawn than a graceful curve. It is easier to plant a stiff square of uniform sized trees than to form a picturesque group of various sizes and kinds; but if the eyes of our farmers and suburban planters, and especially of their wives and daughters, were once open to the folly of planting in the old routinal ridiculous fashions, they would soon find, or, invent better forms for planting their choice trees and flowers. Nothing can be worse than the stiff formal figures now employed. Any irregular borders or plats cut in the surface of a lawn and planted with the shrubs and flowers they wish to grow, would be better than these. In such plats, by planting always the tallest growing ones in the center, beautiful masses of foliage can be formed.

Every farm or residence requires, among its ornamental appendages—

First—Fruit Trees.—But these should never be planted in front of the house, or in any grounds intended to be strictly ornamental. It is a rude and miserly idea of profit, to attempt to combine fruit, shade and ornamental trees. Fruit trees are as a general rule, unsightly objects when out of their proper place. A pyramidal pear tree, for its form, a crab tree for its blossoms, or a Siberian apple for its ornamental fruit, may be tolerated on the outer edges of such grounds, to break the transition from lawn to orchard.

Second.— The lawn should front and flank the house on one or more sides. It should not be forgotten that the word lawn, means "an open, clear space;" an "open space between woods. Many persons appear to make no calculation of the

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size a given tree may attain, but cover their whole lawn with tall growing trees and plenty of evergreens, which when grown up, entirely obliterate all traces of a lawn proper. In the home lawn, a few groups and single specimens of shrubs and trees of low-growing habits, only should be planted; evergreens should be introduced sparingly, and those only of dwarf habits near the house. One or two tall-growing trees, trimmed up, of elm or linden, or a small group of Lombardy poplars, placed so near the house as to let their afternoon shadows fall on the roof, might be found grateful and healthful in mitigating the heat of our summer suns; but the practice of embowering the dwelling in a dense growth of trees, shrubs and evergreens, even to training grape vines, climbers and annuals over windows and porches, which is so common in the country, cannot be too strongly deprecated, either on the score of health, comfort, or beauty. The groups of trees and shrubs on and surrounding a lawn, should be so arranged as to break it, almost imperceptibly, into several lawns or open spaces, varying in size or shape. The largest groups and tallest trees should be placed fartherest from the house and from the center of the grounds, so as to make the transition gradual from the open ground to the larger belts or parks of trees adjoining.

These form the *third* department in ornamental planting. They need not be invariably planted in formal bodies or straight lines, like blocks of trees in a nursery. A very little skill and a little common sense, *alias* brains, will suffice to give them such varying outlines, as to secure a much more pleasing effect. The parks or timber belts of a farm should be so arranged, whether formed from natural forests or artificial plantations, as to shelter or break off the prevailing winds or storms from the farm yards, buildings and orchards. To do this it is necessary they should be planted immediately adjoining them. A few scattered trees for shade in summer, is all that is required near the buildings. Evergreens judiciously interspersed in and near orchards, are doubtless beneficial, if not allowed to attain too large size. But for the purposes of modifying the climate and shielding from storms, it is far better that they should be planted at some distance from the buildings. If too close they cause stagnant air in summer; and it is probably true that the force of strong gales in summer or winter, is best broken by belts or forests at some distance from the buildings. It is also probable that deciduous trees form a better outside barrier to winds, than close belts of evergreens; strong gales passing over the latter in an unbroken volume, while bodies or scattered groups of the former, strain and comminute the air into a million fragments, and not only break its force, but actually raise its temperature while passing through them.

Fourth—Roadside Trees.—If farmers could but place a higher value on beauty, in connection with the enhanced value of their lands, instead of the straight, formal rows we now see by the roadside, they would plant groups of greater or less size, so placed as to leave the best views open to the passers, as well as to the proprietors from the premises. Why should not our farmers and land owners be educated up to this point of æsthetic culture in tree planting, as well as in architecture? No intelligent country gentleman thinks of erecting a first-class dwelling without employing the best artists and mechanics to plan and construct it. He would feel insulted by an architect who should plan and build him a house with a wide hall through

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the center and a huge stone chimney at either end; and yet such taste is not more *outre* than the arrangement of his formal groves and dismal avenues.

We did not intend to give a descriptive list of trees to be recommended, but will say in closing, plant such trees as you know will succeed in your section, and do not be ashamed of your native forest trees and old-fashioned shrubs; nor be deceived by the long list of new varieties, or high-colored plates of handsome, but costly and often tender exotics. The true charm of a place consists in its style and keeping, not so much in the materials employed. The oaks, ashes, maples, larches, elm, linden, hickory, walnut, willow, poplar and wild cherry, for deciduous forests; the mountain ash, thorn, crab, dogwood, service, sumach and the native evergreens growing in your own section, and others found in your nurseries, are just what you want, and we had almost said, all you want, for ornamental planting in the northwest. Those who are able should always secure the services of a competent landscape gardener in planting or forming plans for grounds. A few examples of good taste will educate and direct the ideas of whole districts. When this aid cannot be had, works on landscape gardening should be procured and studied. Our common school libraries should contain them. Attend horticultural meetings and gain information, by enquiring for knowledge, and by imparting your own. Above all, do not harbor the mischievous and mulish sentiment that whatever suits *you* is good enough. You may think that it suits you to place your pig-pens and cattle-yards conspicuous and "handy" before the house and grounds; but it does not suit you, nor will it pay you, nor give you satisfaction, because it does not suit the man of good taste, who is the coming man among us, and who will one day buy or occupy your place. You despise the man who disfigures his premises by building an untasteful and old-fashioned house, merely because it suits his sordid nature or his old-fogy ideas. Then why should you violate the "eternal fitness of things" in the surroundings of your own home, from the same cause? You *should* study to please others. The estimation of others fixes the value of your farm, your house, your stock, your improvements. Their market price depends upon style and quality. Besides, you have your family to please, and their moral natures to elevate. Your neighbors, your country and race have a like claim upon you. Your posterity will thank you for thinking of their interests, and as old age creeps upon you you will be happier for having been benevolent, and for having improved yourself and benefitted the world by exhibitions of good taste which will remain to perpetuate your memory.

PEAR CULTURE.

Mr. TUTTLE—There is very little to encourage the rearing of pears in this state, as there has been so much failure with all the sorts that had been experimented with; and consequently there had been little or no progress made, unless the establishment of the fact that nearly all failed here might be considered progress. The Flemish Beauty alone seemed to be hardy enough to stand the climate, and to succeed when it stood on a stock of sufficient hardiness to resist the inclemency of the seasons. That pear was about as hardy as the average of the hardy list of apples; he could give many instances, and others would recall cases, where this had stood while all the others had failed. He knew of trees in this state that would measure

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a foot in diameter, and they been broken down with the weight of their fruit. The Early Bergamot has been fruited here for many years, and in hardiness it came nearly up to the Flemish Beauty. When we shall better understand the management of this last, he believed it would be found flourishing as well in Wisconsin as in any state of the union; but we must secure a hardy stock, on which to grow it. He had tried the Mountain Ash (*Pyrus Americana*), as a stock, but he was not satisfied that it was to any advantage.

Mr. KELLOGG had the Flemish Beauty growing on the Mountain Ash, three years old, which was doing remarkably well.

Prof. DANIELLS had it top-worked on the Hyslop Crab, and for two years it was doing exceedingly well.

THE BOX ELDER.

Mr. MCAFFEE would not neglect such trees as the Box Elder (*Acer Negundo*), a sample of the growth of which, made last year, and which he now exhibited to members, more than six feet in length, and an inch in diameter; and this was only a fair specimen of its average growth. The tree was perfectly hardy in all parts of Iowa and southern Wisconsin, and would grow of large size, and was everyway suited to the lawn or the grove. The white ash was another tree of great value for similar use; a good grower, and its value as timber all were ready to acknowledge. The hackberry (*celtis occidentalis*) possessed many valuable properties, for mechanical and cabinet purposes. These three sorts of wood were all worthy of much more attention than they have heretofore had, as rapid growing, valuable and ornamental trees.

Mr. HOILE could endorse all that had been said concerning the Box Elder, and more still. He knew that it was a hardy tree, and could endure more hardship and rough usage than any tree he ever saw. It was less injured by the trampling of the streets, or the stampings of horses and cattle in the pasture, than any variety of tree he knew.

Judge KNAPP agreed to what had been said of the hardy character of this tree; and also hoped they would not forget that it stood at the head of the sugar producing maples, for sweetness and quantity of sap. It is able to endure almost any amount of drought, being one of the last trees one sees in crossing the plains, and the first found on the opposite side of the plains.

Mr. WILLARD mentioned a variety of variegated foliage, just being introduced, which was very beautiful, as an ornamental tree.

THE LARCH.

Mr. KELLOGG desired to hear something said about the larch. He believed it a tree of great value for timber, and knew of instances where a tree fairly set had made a growth of an inch in diameter in a year. He exhibited some samples to show its rapid increase in size.

Mr. MORROW heartily believes in the value of the larch when properly planted and cared for; but he was afraid that there was danger of overdoing the thing, and

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that by extolling it too highly, there was danger of loosing sight of others equally good.

Mr. McAfee had had some experience with raising the larch, when the seeds are planted and reared till they are a year old they will not average two inches in height, and must be shaded to keep them at that, and hand-picked to keep down weeds. It was of no use to talk or think that the farmers will grow the larch from seeds; and because they must always buy them, they will never become a farmer's tree; the nurseryman alone can handle them. On the other hand, a farmer can gather a bushel of the seeds of the maples, or box elder, and by keeping them in rotten wood, or half dry sand, they are as sure to grow as beans, and are about as easily tended the first year. The same was true of the white ash and the hackberry, all of which would be a foot high before fall.

Mr. Peffer said that the larch was subject to the attacks of a borer, as well as the American tamarack; and the timber was not of the imperishable character that had been represented.

Judge Knapp called attention to a section of the white ash that had been laid on the table; the section showed but fourteen years of growth, and yet it made grains of more than half an inch in thickness each year, thus showing an increased diameter in the tree of more than an inch each year. No one would pretend to compare the timber of the ash with the larch for value. The European larch, which is alluded to by gentlemen, comes from and flourishes in an atmosphere of great dampness. We must remember that we have not such an atmosphere here; and under that view he thought it only a matter of time as to the value of the larch, in this same dry climate; that its failure was sure to come.

Mr. Plumb believed that people would have the larch, even all we could supply them with; at the same time he believed we could do no better than to encourage the growth and culture of the ash, the box elder and the maples.

Mr. McAfee would call attention to the fact that a borer had attacked the soft maples in Illinois, and were destroying many of them; had seen a few in the hard maple, but never in the box elder; and on that account they were discarding the soft maples in that state.

The Secretary then read the following from Thomas Meahan, Philadelphia:

THE NECESSITY OF A BOTANICAL EDUCATION.

Gentlemen of the Wisconsin State Horticultural Society:

I have received an invitation from your esteemed Secretary to be with you, or at least to prepare an essay for your winter meeting. Nothing would delight me more than to be able to accept, but I am nearly borne down by the weight of work. The alternative I will try at least to do. I am frequently forced to decline even such requests; but I have so often received kindnesses from western horticulturists, far beyond, as I have thought, my ability to requite, that I gladly avail myself of any opportunity, when it is at all possible for me, to render a trifle in return.

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Your Secretary suggests that a few thoughts on "the necessity of a botanical education to the success and greatest enjoyment of the horticulturist," might not be unacceptable. I am not so sure about the necessity to the success of the horticulturists, as that success is generally understood. I remember that when a young man, and in the midst of a very large circle of young men, all studying horticulture, it was often that we heard the taunt—"What is the use of all your botany? Can we not grow cabbages and potatoes as well without all this nonsense, as you can with it?" It was true; and is to this day—and I often think of it—they are doing nothing but growing potatoes and cabbages, mostly toiling day by day for their daily bread, and hardly knowing to-day what to-morrow's field will bring them forth. The little band of botanical students however, then with no means, nor any derived beyond a thirst for knowledge, all are in positions of honor, trust and profit. One of these poor horticultural students is the present Dr. Berthold Seemann, whose title of LL. D. has been awarded to him for his distinguishable services in horticultural service, and whom as the editor of the leading botanical journal in the world, is probably not unknown to many of you. At the present moment he is in the wilds of Central America, seeking what he may find useful or ornamental to add to the pleasures or comforts of his fellow man. Another of these poor gardeners has charge of a considerable tract of land used for scientific experiments by the East India Company at Otacamund, in the East Indies—a position of the highest responsibility and usefulness. Another is director of the celebrated gardens of the British Government at Melbourne, in Australia; and so on of all the others. Indeed, whether in professional life, or as mere amateurs in horticulture, I never knew one who united to mere practical gardening a love of botany, who did not succeed in producing results far beyond his fellows.

I hate egotism, and for fear of fostering it in myself, say little of my own personal career. I depart from this rule now only in the hope that I may teach from experience. I will then say that if I have achieved any success in horticulture, it has been all owing to the love of botany, which was communicated to me by my honored father, himself a humble, working botanist, and at the same time one of the most successful of the practical gardeners of his day. He was one of the pioneers in the wonderful success in the culture of the grape and the pine apple under glass, which has of late years made English gardening so famous, that even Italian potentates have borne testimony to the fact, the fruits of that clear and nature favored skies, could not begin to compare with the artificial products of these island gardeners.

Botany, I know, as often taught, fails to carry with it any idea of utility. In my wanderings through the Union during the few weeks of what I call my summer vacation, I often come to some country town, and in reply to inquiry, am directed to some one locally celebrated as a botanist; after introducing myself, it is quite likely he says, "yes, I studied botany closely once, but I collected all the plants of the place, and as there was nothing more to learn, I have given it up; but here are my specimens."

Poor fellows, they had but really got together the letters of the alphabet. At the point when the real botanist begins to understand the true language of the science,

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they gave up the ghost, or rather kept the "skeleton in the house," in the shape of an useless herbarium.

Collecting specimens is an excellent help to a beginner in botany. It educates the eye to see differences in a way which nothing can do better; and by preserving the specimens he is enabled to refer to these differences whenever his memory fails him. Then he learns to combine resemblances into groups, like with like, and thus commences the education of the reasoning faculties, without which no great undertaking ever succeeds. Any aid to reason helps one; but in our daily undertakings those things aid most which are in the nearest relationship; and what is nearer to horticulture than botany? Chemistry, zoology, entomology, all have an intimate connection with plant culture, but the knowledge of the plant itself is the crowning glory of them all.

Powers of reasoning and of judgment on the differences one sees in plants being once awakened, he will be sure not to stop here. He will want to know the causee of those differences. Then he feels that he must know something of the structurs of plants; how they grow and how they feed, and of the laws which control their organization and their functions.

It is well known that when a man knows the nature of his horse, or the parent the character of his children, he is better able to manage them than without this knowledge. So it is with plants; the one who understands all about them is at once prepared to act in an emergency, where one who knows not is entirely in the dark.

It is so hard to show to one who knows nothing of botany, how great is the assistance to be derived from its knowledge in his horticultural operations, or how much it will add to his pleasures. But I will try one or two illustrations.

One not acquainted with botany would hardly suppose there was any close relationship between the tulip tree and the magnolia. Now we have in American gardens a beautiful tree—the Chinese magnolia, which is clothed with numerous fragrant white flowers before the leaves are out, or other things much in blossom in spring. It is in great demand from its surpassing loveliness; but because it does not perfect seeds here, will not grow from cuttings, and layers take two years to root, is scarce and dear. Knowing from botanical studies that the magnolia and tulip tree are closely allied, I last year tried to graft half a dozen of this Chinese variety on the tulip. They are so far alive, and the experiment promises a complete success. If it should succeed, this rare tree will become comparatively common, much lower in price, because tulip trees can be more readily obtained than even more closely allied magnolias, and thousands enjoy this beautiful flower who would not perhaps but for this little bit of botanical knowledge as to the affinities of the tulip tree.

And now as to the pleasure which a knowledge of botany confers. During the past year or so, cases have occurred where a potato has been found apparently growing out from and originating in the centre of another one. Leading New York papers have even illustrated this as somethiug wonderful. It would be wonderful if it really occurred; but it is only apparently so, and yet how is the appearance made so plausible? A lady botanist took it in hand. First, says she, a potato by the laws of botany is but a thickened stem, filled with starchy matter. If it grew

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above the ground, and lengthened out a little, and had less starch, it would be woody, and with its eyes or buds, be like any other branch. In this case the centre of the potato represents the pith. Now we know that a bud cannot form and develop within the pith of a tree, therefore this inside potato did not originate there. This of course set her to watch for other instances where the development of the mystery could be better traced. She was successful, and found that sometimes a young stolon or thread of a potato plant will strike against and penetrate another potato already formed, and as you know the potato forms at the end of this thready stolon, the new potato was thus formed inside its elder fellow. All this resulted from her botanical knowledge of the nature of pith. Think you no pleasure resulted from this discovery? Scores had passed by this mysterious sepulchre within which was laid up a treasured bit of knowledge, and saw nothing. For her, the stone which barred the entrance was rolled away, and she was permitted to sit therein, an angel.

The untutored savage who sees a spirit in every huge rock, or numberless gods in the unusual occurrences of regular natural phenomena, is not more to be pitied than they who with innumerable of the most beautiful processes of nature, as exhibited in plant-life, go to their graves as ignorant of them as a still-born babe.

But I would not urge its study on the ground of pleasure alone. For me I know it has laid bare the successful practice of horticulture in a way nothing else has or could have done, and this has brought, if not wealth exactly, yet a comfortable competence I should certainly not have had without it. But beyond all this is the wonderful pleasure the knowledge itself brings. I can honestly say that if it were a bare choice either to go through the world and die worth millions, or have a knowledge of all the beautiful things about me, with only to have necessaries of life otherwise, I should not hesitate which side to choose.

In conclusion let me say, that if my poor pen could have the weight equal to my will, every fruit-grower, gardener, or tiller of the soil in any shape, should be a student of botany, as one of the surest means of making his practice lucratively successful, as well as adding to some of the dearest pleasures of his life.

Mr. C. ANDREWS of Marengo, Illinois, read the following:

FRUITS FOR THE NORTHWEST.

The position which your society and yourself, Mr. President, in particular have assumed in previous proceedings, addresses and discussions, on the question of creating a popular horticulture for the northwest, by adopting such fruits as have been found to be wholly hardy and productive in our climate, as a basis for further improvement and an initiatory education of the masses in the desire and habit of growing and using fruits—is such as must secure the commendation of the true horticulturist of the age, and the lasting gratitude of the people of your state and section. The merit of that position stands out more clearly when placed in comparison with the teachings of another class of fruit-culturists who advocate the increased cultivation of only such fruits as afford a high market value and profit to the commercial grower, in contra-distinction, as it must appear, to the far higher

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importance of growing such varieties as shall supply the masses with an abundance of cheap, wholesome, home-grown fruits. The difficulties which the cultivators of fruits in the northwest encounter are not to be undervalued, but the principle above alluded to, so clearly stated in your last annual address, doubtless presents the most feasible solution of them. The progress of horticulture in that section of our state so analagous in all its conditions to your own, is yearly furnishing facts to corroborate your opinion, viz: that the hardy, abundant-bearing and cheaply produced (although so-called coarse) fruits of our section, are in reality far more valuable in the aggregate to the whole community than any others on our list. The Early Richmond cherry may be mentioned as an instance in point. Our market of Chicago probably could not, in 1855, have furnished fifty pounds of this cherry grown in northern Illinois. Now we have it so plentiful that it is said to "bring but little more than the cost of marketing," thus placing it within the reach of all classes. Large quantities of this fruit are canned for sale and for winter use. Commercial orchardists will hereafter perhaps plant sparingly of this sort, but the trees for private planting are still in great demand. This is precisely the fruition sought. The sooner such a supply of all kinds of fruits is reached the better. Commercial growers, who desire fancy prices, must then turn their attention to originating or growing, if possible, some more improved or higher priced varieties, and if they succeed the public will in their turn be benefited. Such employment certainly better becomes the horticulturist than seeking to repress cheap fruits in order to keep open a market for costly ones.

In the northwestern corner of that state a hardy native variety of the plum (Miner or Hinckley) is demonstrating the same principle of cheap and plentiful production, thereby stimulating the popular sentiment in favor of cultivating fruits. Instances were given at the late meeting of the Northern Illinois Horticultural Society of the productiveness of this plum, which prove that neither our climate nor our insect enemies are a barrier to success with this desirable fruit, and also that our section has resources of its own of which we need not feel ashamed. A favorite culinary fruit of the east, the quince, cannot be grown at all in the northwest and scarcely anywhere in the west. But we have here a substitute for that fruit which more than replaces it in many respects and perhaps fully in all. The Soulard Crab, a product of our native forests, (either by variations or crossing) is finding favor in eastern markets, and will no doubt supersede the quince to a great extent even there, on account of its cheap, easy and abundant production.

Your own suggestion with regard to the Siberian family of apples bids fair to prove a most correct and far-seeing prophecy. The Transcendent apple is now the most profitable fruit sold in the market of Chicago, sustaining higher prices than that of any other apple of its season for cooking. There is no longer any doubt but that this variety and others of the same species, extending through each season, will soon become as plentiful and as commonly used, as the Early Richmond cherry now is in its season. Increased production of all the above classes of fruits will be followed by increased consumption, so that the grower will be able to dispose of his surplus at paying prices, either in the fresh, canned or dried state. And the results of the introduction, and dissemination of these fruits throughout the country, judg-

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ing from facts already apparent, must prove of incalculable national benefit. For the qualities of each of the above species, taking into consideration the uses of the fruit, its cheap production, and their superior fortitude against the attacks of insects and the influence of a variable climate, are such that their cultivation will not be confined to northern sections only. Like the Wilson strawberry and the Concord grape there is no section but will be benefited by their introduction. It is thus that the northwest, instead of remaining a mendicant dependant upon the meager supply of other sections, shall become a contributor to the pomonal riches of the nation.

Allow me in closing to return my most cordial thanks for past instruction received in attending your meetings and exhibitions, and express the hope that your combined efforts in creating a horticulture adapted to the wants of the vast and growing population of the northwest, will prove as successful in the future as they have been auspicious in the past.

TREASURER'S REPORT.

The report of the Treasurer which has been omitted from its proper place, immediately after the report of the Secretary, is here inserted, with this remark, that it was submitted to the examination of the Finance committee, and found correct, and on their report approved by the society.

To the President and Members of the Wisconsin State Horticultural Society:

GENTS:—As your Treasurer, I submit the following report of the receipts and expenditures for the fiscal year ending February 8, 1871:

RECEIPTS.

For memberships	$207 00	.....
From exhibitors	19 00	.....
Oshkosh City	100 00	.....
Gross proceeds fair	194 25	.....
State Agricultural Society	600 00	.....
Total receipts	.....	$1,120 25

EXPENDITURES.

Secretary's orders, Nos. 19 to 38 inclusive	$826,18	.....
Total	.....	$826 18
Leaving a balance of	.....	$294 07
Add balance from last statement	.....	326 31
Total balance on hand	.....	$620 38

There is I think some outstanding bills unpaid, which will reduce this balance some. I would respectfully suggest that the Treasurer be authorized to invest a portion of this fund in government bonds.

Respectfully submitted,

GEO. A. MASON,

Treasurer Wisconsin Horticultural Society.

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The Secretary also read the following from W. FISHER of Vienna, Dane connty:

I would like to hand in my testimony to the horticultural society, in favor of seedling apples; I have been in favor of them for many years, and think them far more hardy than grafts. We have at least one hundred bearing trees, all good, many of them superior; of all colors and sizes, from one and a half inches to three inches through; twenty kinds are sweet, some very good, and ripe at all times, from August to April; some cannot be beaten in the state, either for beauty or flavor. These are free bearers; some great ones, growing annually in clusters of from three to seven at one bud; not over five per cent. have been tender, the balance are hardy. I do not wish to undervalue our nurseries, but I do want those who are too poor or too careless to set an orchard from a nursery to plant their apple seeds and grow them.

The President then appointed the standing committees for th year, viz:

On Nomenclature—J. C. PLUMB, Milton; A. G. TUTTLE, Baraboo; W. FINDLEYSON, Mazomanie.

On Seedlings—C. WATERS, Springville; I. GOULD, Beaver Dam; G. P. PEFFER, Pewaukee.

On Observation—J. G. KNAPP, Madison; I. HOILE, Oshkosh; H. H. GREENMAN, Whitewater; J. B. RICHARDSON, Sheboygan Falls.

The society then adjourned *sine die;* all the persons who had participated in the proceedings greatly pleased with the valuable information they had received from others, and for the harmony and good feelings that had actuated all the members.

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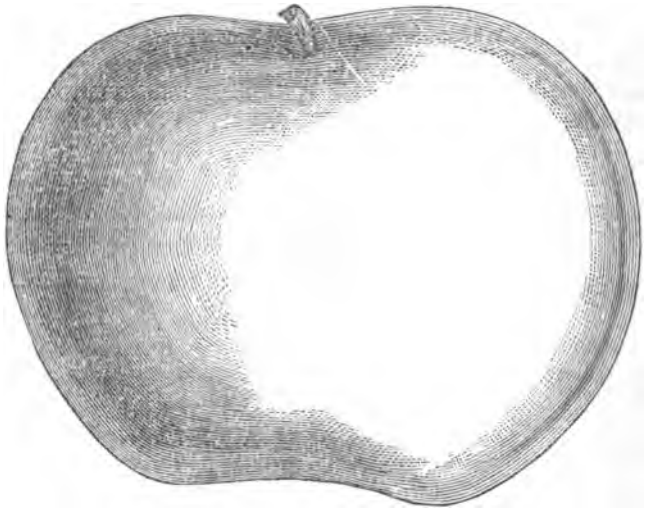
MISCELLANEOUS PAPERS.

THE WALBRIDGE APPLE.

This apple which was first brought to the attention of the pomologists of the northwest by Mr. A. G. TUTTLE of Baraboo, was discovered by him in an orchard planted some years since near Sauk Prairie, in Sauk county. He was greatly pleased with the appearance of the tree and fruit, and endeavored to obtain its history, if it had one, and the name of the apple; but all he could learn of it, was that



The Walbridge Apple.

the trees were part of a lot obtained in some Ohio nursery. Therefore, for the want of a better name, he called it the Walbridge, after the owner of the orchard; and by that name it has been known in this state for some years past; and it is so called in this report. From the following papers, its true name and value will appear.

Mr. TUTTLE thus writes of this apple, as published in the *Western Farmer*, April 29, 1871: "I have ascertained at the east, from F. R. ELLIOT and CHARLES DOWNING, that the 'Walbridge' and 'Coggswell' are identical. The trees were planted here about sixteen years since from Ohio. Have proved hardy, even on the open

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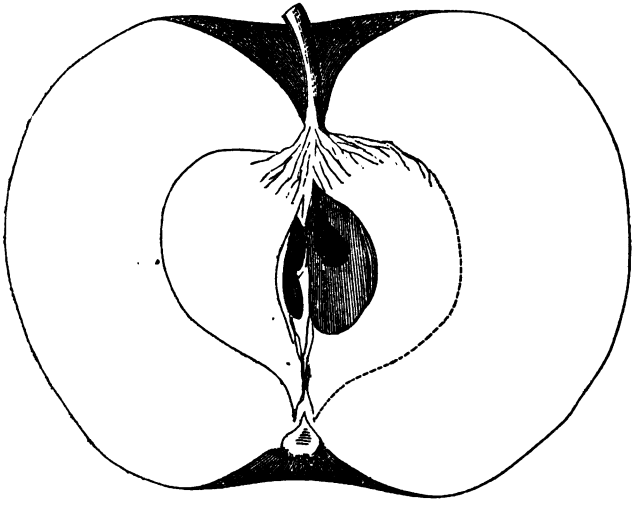
prairie. We cut our first cions from a neighbor's trees, and gave them his name, for the want of a better one, viz., 'Walbridge.' It is the variety that has been looked for in the northwest for the past twenty years, as it is a good grower, regular and profuse bearer, perfectly hardy, and keeps through June in ordinary seasons; size little above medium. For description, see Downing's New Work."

Downing's history and description of the Cogswell is as follows: "This excellent apple originated in the town of Griswold, near Norwich, Ct., on a farm which came into the possession of WILLIAM COGSWELL about the year 1798. The original tree was then about forty or fifty years old. The fruit was first exhibited in 1816 or 1818 before the Massachusetts Horticultural Society. It is an extremely valuable variety wherever grown, either for table or market purposes, a good keeper, and bears carriage to market long distances without apparent injury. Tree a vigorous, upright, spreading grower, an abundant bearer of very regular, even-sized fruit. Young shoots dark reddish brown, somewhat downy. Fruit, size above medium. Form, roundish oblate, regular. Color, rich yellow, nearly covered with red, marked and streaked with bright red, pretty thickly sprinkled with areole dots. Stalk short, rather slender. Cavity large, thinly russeted. Calyx small, nearly closed. Basin



The Walbridge Apple—Outline.

small, shallow. Flesh, yellowish, fine-grained, tender, juicy, scarcely subacid, rich aromatic. Core small. Very good to best. December to March."

WARDER, American Pomology, 1867, p. 580 gives nearly the same description as Downing and under the same name.

T. W., in the *Western Farmer*, May 20, 1871, thus writes: "I see in the *Western Farmer* for April 29, an article written by A. G. Tuttle, on the Walbridge apple, and that it is identical with the Cogswell, and that the trees were planted in

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Wisconsin 16 years ago. James M. and Frederick Cogswell moved from Norwich, Conn., in 1836, to Parma, Cuyahoga county, Ohio, taking with them various cions, among which were cions from the tree spoken of by Downing, which was on their father's farm (Wm. Cogswell). They have introduced them quite generally throughout that part of Ohio. The apple is called by them Cogswell Pearmain, and considered their best apple."

JAMES M. COGSWELL of Parma, Ohio, in the same number of the *Farmer*, writes: "I notice in your very excellent journal of April 29, a partial history and description, by Downing, of what he calls the "Cogswell apple." It should be the "Cogswell Pearmain," being so named by the Boston (Mass.) Horticultural Society—Pear, on account of its rich, aromatic flavor, adding Main, on account of its resemblance to the old English Pearmain. I hope the true name will be perpetuated. It is indeed, all that is claimed for it. The public would like to know I presume, that the tree is remarkable for longevity. The old seedling sprang into life about 1750. I ate fruit under its branches, from 1801 to 1830; and I saw it in 1855. The old head was entirely gone, and it was rejuvinated by lateral branches having struck out vigorously, making a fair head, and was then in good bearing condition, and from the appearance at that time, I have no doubt it is now, at 120 years old. Dr. Joseph Fuller, an eminent physician, said when a person could eat a rare-ripe peach, they might eat a Cogswell Pearmain. Wm. Cogswell who owned the land on which the seedling stands, was my father. He caused the apple to be introduced to the world, and for him the apple was named, and for his sake, I have a desire that the true and original name should be retained."

It is to be presumed that at the next meeting of the society the name adopted by Downing and Warder will be promulgated, and that Walbridge will be laid aside, unless the description of Peffer and further examination shall prove that it is another and distinct apple, in which case no change will be made.

The following description by G. P. PEFFER, who drew the drafts for the cuts of the apple here given, will be considered of interest:

"This variety has been introduced by A. G. Tuttle of Baraboo, Wisconsin. At our last horticultiral meeting he exhibited the fruit in very fine condition. This drawing is made of an average specimen this day (March 18, 1871). He stated that he came across it some years ago, at an orchard owned by a Mr. Walbridge, a neighbor of his, and being surprised at the productiveness and fine looking fruit, also sound, healthy and well shaped tree, he got some cions, but could not find any descriptions in any horticultural books to identify it, nor did Mr. Walbridge know whether it was a grafted or seedling tree.

"Mr. TUTTLE called it the Walbridge. He sent some of the cions to many of his horticultural friends in the northwest, and thus I got a few cions two years ago, to give them a trial, and from growth thus far I am satisfied it will be desirable for further trial, as many of the cions grew four feet the first season, and ripened up well before the October frost, and did not kill down as many other kinds did from not getting the wood ripe before the October freeze. Thus far the young trees are very satisfactory, but I will not recommend it for general culture and setting, until five years are up, and then probably only for further trial.

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"Trees very vigorous, upright, spreading, productive; shoots long light gray, covered with down; foliage grayish green; leaves upright; fruit medium to large; shape globular to roundish flat; surface smooth, greenish yellow ground, covered with dull red, mixed and striped with bright red on the sunny side, with a few gray, irregular dots. Basin regular—small; a little russety, quite smooth. Eye small to medium, closed. Cavity medium, regular; stem medium, curved, grayish brown. Core roundish oval, rather small, closed, almost clasping the eye. Seeds numerous, regular size, dark brown. Flesh white, firm, mild sub-acid; good skin, quite tough, a good keeper. Season, March and April."

THE STATE FAIR.

Without very great anticipations for a great show at the annual exhibition, the horticulturists went forth to their duty at the state fair. They had been constantly reminded that 1870 had been a precarious season; that the "oldest inhabitant" had never seen anything like it. Fruits of all kinds had prematurely ripened, early fall fruits had all gone in September, or were fast decaying; and many early winter sorts showed signs of immature if not over-ripening. Grapes were nearly gone, pears also; plums were a very light crop; thus the foundation for building a very large expectation was poor; and the officers of the society trembled for the result. But when the time came we were happily disappointed. The fruits came in at an early hour, and in large quantities, so much, that before the time for opening the exhibition, all room was taken, and nearly 2,000 plates were on the tables. Competition was very lively. A marked feature of the fair was the competing exhibition by counties and societies. There were the Waukesha County Agricultural Society, and the Milton Farmers' Club of Rock county, both ambitious for the fifty dollar premium. This exhibition by county or local societies is productive of much good, and results in bringing the influence and interest of a much larger class as exhibitors than it otherwise would. Another marked feature of this show was the exhibition of new fruits, seedlings "to the manor-born." G. P. Peffer showed a chance seedling crab which had many points of excellence, and that will make its mark and be heard from hereafter with interest. The Pewaukee, also originated and shown by the same man, surpassed the expectations of its many friends, and was this year about one-third larger than ever before, and in every respect equal to the past years. The Janesville grape was also much better than ever seen before, and is growing in favor more and more; and has well established its reputation for adaptability to our changeable climate, giving a fine fruit. The Worden was also riper than last year, and showed its character to better advantage than ever before, and proved that it was distinct from the Concord, as some supposed last year. There was also on exhibition an ever-bearing raspberry, an accidental seedling, found in Jefferson county, where it has fruited for a number of years. The bushes on exhibition were filled with fruit similar in appearance to the Doolittle; and for which is

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claimed as much prolificness as any raspberry, and not surpassed in quality or size; perfectly hardy, and a vigorous grower. "The last crop," says the exhibitor, "begins to ripen the last of August or first of September, and continues to blossom and ripen fruit up to freezing weather." The exhibition of both fruit and flowers was almost entirely by professional growers, the amateurs seeming to have forgotten that they had a chance.

The following premiums were awarded by the society:

Fruits by Professional Cultivators.

APPLES.

Best and greatest variety, not less than three specimens each, A. G. Tuttle, Baraboo, Gray's Botanical Text Book $15
Second best, G. P. Peffer, Pewaukee, Chromo, Sunset 10
Third best, H. W. Thompson, St. Francis, Chromos, Under the Apple Tree, and Rest by the Roadside 5
Best ten varieties adapted to the northwest, A. G. Tuttle, Baraboo, Chromo, Easter Morning 10
Second best, H. M. Thompson, St. Francis, Chromo, The Barefooted Boy 5
Best five varieties adapted to northwest, C. H. Greenman, Milton, Chromo, Wild Fruit 5
Second best, I. Gould, Beaver, The Horticulturist one year 3
Best show of autumn apples, A. G. Tuttle, Baraboo, Chromo, Before the Frosts 3
Second best, G. P. Peffer, Pewaukee, Western Farmer one year 2
Best show of winter apples, A. G. Tuttle, Baraboo, Solid Silver Spoons 10
Second best, G. P. Peffer, Pewaukee, Chromo, Evening 5

PEARS.

Best and greatest variety pears, three specimens each, G. P. Peffer, Pewaukee, Silver Headed Cane 10
Second best, George Wolf, Staatsville, Chromo, Morning 5

PLUMS.

Best and greatest variety, three specimens each, George Wolf, Staatsville, Gold Pen and Holder 5

GRAPES.

Best and greatest variety not less than three bunches each, A. G. Tuttle, Baraboo, Chromo, The Birthplace of Whittier the Poet 15
Second best, C. H. Greenman, Milton, Insects Injurious to Vegetation 8
Third best, George J. Kellogg, Janesville, Western Farmer for 1871, and Chromo, Our Kitchen Boquet 5
Best three varieties adapted to general culture, George J. Kellogg, Janesville, Downing's new Fruit Book 7 50
Best two varieties, C. H. Greenman, Milton, Strong's Grape Culturist 3
Best one variety, George J. Kellogg, Janesville, Western Rural 2
For largest bunch of native grapes, A. G. Tuttle, The Western Pomologist ... 1
For largest bunch of Delaware grapes, George J. Kellogg, Janesville, Western Pomologist 1

Fruits by Non-Professional Cultivators.

APPLES.

Best and greatest variety not less than three specimens, H. Floyd, Berlin, Chromo, Launching the Life Boat 15
Second best, Wm. Findlayson, Mazomanie, Gold Pen and Holder 10
Third best, J. W. Parks, Dodges Corners, Chromo, Morning 5

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Best ten varieties, not less than three specimens each, Wm. Findlayson, Mazomanie, Solid Silver Spoons $10
Second best, John H. Paul, Genesee, Chromo, Not Caught Yet, and The Horticulturist for 1871 5
Best five varieties adapted to the northwest, James Ozannie, Jr., Racine, Figuier's Insect World 6
Second best, John H. Paul, Genesee, Journal of Horticulture for 1871 3
Best show of autumn apples, H. Floyd, Berlin, Chromo, After the Rains 3
Second best, Wm. Findlayson, Mazomanie, Horticulturist 2
Best show of winter apples, Wm. Findlayson, Mazomanie, Chromo, Summer Fruit and Autumn Fruit, two pieces 10
Second best, James Ozannie, Racine, Solid Silver Spoons 5
For largest specimen apple, Ira Fuller, Baraboo, Chromo, Victory 1
Show crab apples, George Wolf, Staatville ..... Honorable Mention
Display figs, G. P. Peffer, Pewaukee ..... Honorable Mention

PEARS.

Best and greatest variety pears, thre specimens each, E. B. Thomas, Dodges Corners, Silver Fruit Dish 10
Second best, James Ozannie, Jr., Racine, Downing's Cottage Residences 5

PLUMS.

Best and greatest variety, three specimens each, N. Brick, Milwaukee, Gold Pen and Holder 5

GRAPES.

Best and greatest variety, three bunches each, William Reid, North Prairie, Gold Headed Cane 15
Best show foreign grapes, grown under glass, Mrs. Alexander Mitchell, Milwaukee, Chromo 5
Best two varieties grapes, E. B. Thomas, Dodge's Corners, Mead's Grape Culture 3
Best one variety, adapted to general culture, Mrs. Caroline Curtis, Milwaukee, Western Farmer 2

PEACHES.

Best show of peaches, H. Floyp, Berlin, Horticulturist 3
Best show of fruits grown under glass, Mrs. Alexander Mitchell, Milwaukee, Diploma and 10

SEEDLINGS.

Best seedling apple, N. W. Cromwell, Wauwatosa, Western Farmer and the Horticulturist 5

Flowers by Professional Cultivators.

Best floral design of uatural leaves and flowers, Whitnall & Ellis, Milwaukee, Gentleman's Cane $10
Second best, Dunlop & Middlemass, Milwaukee, Set Silver Knives 5
Best and most tastefully arranged and greatest collection of cut flowers, Whitnall & Ellis, Milwaukee, Set Silver Forks 5
Second best, Miss Kate Peffer, Pewaukee, Horticulturist 2
Best and most tastefully arranged basket of flowers, H. Haessler, Milwaukee, Silver Fruit Knife 2
Second best, Dunlop & Middlemass, Milwaukee, Western Pomologist 1
Best pyramidal boquet, Dunlop & Middlemass, Milwaukee, Journal of Horticulture 3
Best pair round boquets, Dunlop & Middlemass, Milwaukee, Boquet Holder 3
Best pair flat boquets, H. Haessler, Milwaukee, Silver Cup 2
Best boquet everlasting flowers, J. Frietag, Milwaukee, Chromo 3
Best display dahlias, not less than twenty varieties, Miss Kate Peffer, Pewaukee, Chromo 5

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Best ten named dahlias, William Gordon, Kenosha, Boquet holder $3
Best five, Mrs. J. C. Plumb, Milton, Silver Tea Bell 2
Best display of roses, Dunlop & Middlemass, Milwaukee, Solid Silver Spoons .. 5
Second best, Miss Kate Peffer, Pewaukee, Horticulturist 3
Best five named varieties of roses, H. Haesler, Milwaukee, Horticulturist 3
Best and greatest variety named verbenas, Whitnall & Ellis, Milwaukee, Butter Knife 3
Best show dianthus, (pink) Miss Kate Peffer, Pewaukee, vase 2
Best show gladiolus, Miss Kate Peffer, Pewaukee, vase 2
Best show tube roses, H. Hæssler, Milwaukee, chromo 1
Seedling verbenas, Miss Kate Peffer, Pewaukee, silver tea bell 2
Best show of ornamental foliage plants, Mrs. Alex. Mitchell, Milwaukee, ornamental vases 5
Best show green-house plants, Casper Thoman, Milwaukee, diploma and 10
Second best, Dunlop & Middlemass, Milwaukee 5
The committee are of opinion that the show of Joseph Pollard, gardener to Mrs. Mitchell, far exceeded all others, but he withdrew from competition with gardeners, and we award a special premium, silver knives and forks .. 10
Best twenty varieties of green-house plants in bloom, Dunlop & Middlemass, Milwaukee, set silver knives 10
Best ten geraniums in bloom, J. Frietag, Milwaukee, silver card receiver 5
Best six fuchias in bloom, J. Frietag, Milwaukee, Rand's Flowers for Parlor and Garden 3
Best six carnations, H. Hæssler, Milwaukee, silver fruit knife 3
H. Happinroth, for display house plants and tea roses, very fine, discretionery, silver spoons 5

Flowers by Non-Professional Cultivators.

Best and most tastefully arranged cut flowers, J. W. Parks, Dodge's Corners, set silver forks 5
Second best, A. M. Johnson, Greenfiel, Horticulturist 3
Best display dahlias, Mrs. A. A. Boyce, Lodi, chromo 5
Best ten named dahlias, Mrs. A. A. Boyce, Lodi, boquet holder 3
Best five named dahlias, Mrs. A. A. Boyce, Lodi, silver tea bell 2
Best show seedlings, A. M. Johnson, Greenfield, tea bell 2
Bhst show phlox, Wm. Reid, North Prairie, China vase 1
Best show petunias, J. W. Parks, Dodge's Corners, Rivers' Miniature Fruit Garden 1
Best show Dianthus, A. M. Johnson, Greenfield, vase 2
Best show ornamental foliage plants, H. W. Roby, Milwaukee, ornamental vases 5
Display balsams, Mrs. P. Yale, Milwaukee, RuralStudies 3
Calla in bloom, A. M. Johnson, Greenfield, book 3

Wines.

Best sample grape wine, G. H. Lamberton, Lamberton, Moore's Rural New Yorker 3
Black currant wine, I. Gould, Beaver Dam ..... Honerable Mention.

Society Exhibition.

Best exhibition of fruit and flower department, by any local society, Milton Farmers' Club, Milton 50

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RAISING TIMBER ON THE PRAIRIES.

BY W. FISHER, VIENNA, DANE COUNTY.

Several times I have seen in the *Western Farmer* essays on this subject, all more or less good, and highly gratifying, but none of them, in my mind, come fully up to the importance of the case. For some years I have felt an anxiety to try my hand at the cause, and now remark that if some person should out-do me, so much the better. People who are possessed of groves, have no need to raise trees, except for shade or ornament; but the man possessed of a bare prairie, should rear timber trees both for comfort and profit. Men many times go from five to ten miles to procure a small timber lot, which is of course of some use to them; especially when they get out of firewood; but when the weather and roads are bad; snow deep and badly drifted, or roads mudddy, the matter is not so very pleasant. All this can be saved; and I will try and tell you how to do it, even on a prairie farm, where there is no grove, or timber growing.

Immediately after breaking the prairie, or now if not already done, I would set apart ten acres on each eighty, or at least fifteen acres to each quarter section, for the express purpose of growing timber. This should be well plowed and harrowed as if to be planted with corn, and nicely marked forty-nine and a half inches each way. The next thing is to select for planting the kind of timber that would best suit a man's fancy. For my part, after careful consideration, I should take cottonwood for the principal portion. This is the best, hardiest and fastest grower we have, among the soft woods. The two next are the soft maple and black cherry; both are hardy and do not winter kill; but they will make but about one-half the bulk of timber per annum that will be made with the cottonwood. In Wisconsin, cottonwood will make an inch in diameter per annum, for thirty or forty years, as an average. Two hundred miles farther south it will grow much faster. Maple and cherry must make two-thirds of an inch to make one-half as much in bulk and quantity as the cottonwood; and yet, I think that I would plant the maple and cherry, but in such manner that they would be left, in thinning out the cottonwood. This last is easily propagated from cuttings; I have thought it might be cut to one or two buds and planted like corn, and that all would come up; and have been disposed to try it. Certainly, where they are cut like currant slips, some six or eight inches long, and set with one or two buds above ground, they are almost sure to grow. A small nursery should be planted for trees to replace any cuttings that might fail, and every row should be perfect both ways. Cherry seeds should be planted when they are ripe in the fall; and the maple in June, as soon as they are ripe. All could be planted in the places they are to occupy, or they might be reared in a nursery for a few years and then re-set in the rows and made to grow according to your liking. They must be kept clear of weeds and grass for at least two or three years, after which they will shade the ground. I would not plow at all, but harrow or work with a cultivator and clean with a hoe, as that practice would leave the land far more even than would furrows made with the plow; be-

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sides the plow would cut many roots and thus be detrimental to the growth of the trees.

The next thing to be considered is the location. I should prefer to have my grove on my north or west lines, and perhaps both; taking care not to interfere with my neighbors' rights when the trees become large. All interference could be avoided by cutting away the outermost trees as they increased. A good fence would be required around the grove, so that cattle, horses and other animals might not damage the trees when small. After a few years the ground might be used for pasturing calves without injuring the trees, and when the trees are large enough to be out of danger, horned cattle might be turned into it. I would not set the trees in rows, thick one way but wide apart the other, as some have recommended, because the trees should be cultivated both ways; and the trees should brace each other, and thus force them to make more perfect tops, which is a very essential point at the start. A proper distance is a little over four feet each way, or sixteen trees to each rod square, or 2,560 trees to the acre; and 25,600 on ten acres. Care should be taken that no tree is wanting, lest the beauty be hurt in thinning out; a thing that must be done, as well for the benefit as for the beauty of the grove. At the end of five or six years, when the trees are four to six inches through, a hundred trees will make a cord of wood, and one thousand trees will last a common farmer a year. After the growth of another year 666 trees will make the same amount of fuel. I will not carry out the table, because the timber will entirely head me in the race; so jumping at a conclusion, will say that 2,000 trees will furnish a house for three years, by the time they have been set ten years, when they would be as many inches in thickness. But by that time, from a ten acre grove, 12,300 trees should have been cut, making some 150 cords of wood, most of which could be sold, or used otherwise than for firewood.

The manner of cutiting would be to begin and cut out the outside row, and then each alternate row through the grove. Then one-half the balance should be cut. As these trees would be larger, they would yield nearly or quite as much wood as the others. The trees would then stand one-half rod apart, and but one-fourth of the whole number would remain. Thus they could stand until they are ten and twelve inches thick, say twelve years old. Then they should be cut so as to leave on the ten acres but 1,600 trees. This last cutting would be 4,800 trees, that would yield a half cord of wood each. Thus it is safe to calculate that about 2,800 cords of wood might be taken from the land as the production of twelve years, and one hundred and sixty trees remain on the acre. At the end of twenty years these last will yield a cord of wood to the tree; and in the mean time it will be well to be planting acorns, hickory, black walnuts, and butternuts, and other trees for future growth.

Without stopping to count profits any more, I will proceed with my process of growing, and thinning out. This may be done by again cutting out half the rows each way, which is 1,200 trees, and leaves 400, or 40 to each acre of land, and two rods apart in each direction, giving them plenty of room to grow to the size of three feet in diameter, and making good mill logs, or other lumber, besides a cord of wood to each tree. And here I must leave this important subject for the consider-

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ation of my farmer friends, especially such as have or may settle on the prairies, or whose farms have been denuded of such trees as it might have possessed by nature; and I submit if they can receive as much profit from any other crop, as from a crop of well selected and planted trees.

[NOTE.—The foregoing is but the substance of a much longer paper, prepared by Mr. FISHER, who has seen seventy summers in the west, which has been condensed, for want of space, and given on account of its importance. Some may disagree with the author in the selection he has made of the variety of timber, and object that cottonwood is of little value as fuel, and almost valueless as timber for any mechanical art. Such an arrangement could be made in the planting that the two last cuttings, containing 1,600 trees, should be black walnut, worth $100 per thousand feet, and butternut and cherry worth $75, or of white ash equally valuable as either, and thus greatly increase the profits from the crop of timber. Cottonwood is excellent to force up the others.—SECRETARY.]

APPLES IN RICHLAND COUNTY, WISCONSIN.

[From the Report of A. L. HATCH, Secretary of the Richland County Horticultural Society].

TENDER VARIETIES.

The following are reported to have winter-killed: Rambo, Esopus Spitzenburg, Early Harvest, Spice Sweet, New York Greening (?), Jonathon, Yellow Belleflower, Ortley, Rhode Island Greening. All the above except the Yellow Belleflower are considered tender by western nurserymen, and very few of them are now propagated. Yet there are some good trees of the foregoing in fruit in the country—showing that we have some good sites for orchards or that there is something in care. Take the Rhode Island Greening for example—Mr. M. Whitcomb of Richwood, has one a foot in diameter, apparently sound and in good bearing state. Mr. Levi Houts of Orion, has half a dozen good trees that have been bearing some time. He had supposed them to be St. Lawrence. Mr. D. R. Turner of Orion, Mr. C. H. Whitford and Mr. Joseph Martin of Sylvan, have each a tree of the Rhode Island Greening. The latter bore six bushels in 1869. I know of but one Yellow Belleflower in the county and that is owned by Mr. L. D. Pellot of Forest. Mr. J. Elliott of Port Andrew, has a tree of early harvest that bore about twelve bushels in 1869.

The following tender varieties have been set and good trees of some of them may be found: Maiden's Blush, Roxbury Russet, Keswick Codling, Gilliflower, Twenty Ounce Pippin, Lowell, King of Tompkins County, Pound Sweet, Early Joe, Sweet Wine, and others. It seems that on good sites, with care, some sorts will succeed that fail under less favorable circumstances.

HARDY VARIETIES.

The "first hardy list" of the Wisconsin Horticultural Society recommended for general cultivation, is as follows: Red Astrachan, Duchess of Oldenburg, Tallman Sweet, English Golden Russet, and Fameuse or Snow. Of the foregoing the Duch-

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ess of Oldenburg has proved the hardiest variety in cultivation in the country. It is a variety of Russian origin, but just coming into fruit here. Mr. Albert S. Neff of Woodstock, and a number of persons at Richland Center, have them sound and healthy from two to five years planted, and without a blemish from the weather. This is probably one of the best tested, successful, hardy trees grown in the county, as it is succeeding in the valleys on the most trying sites. Mr. S. I. Freeborn of Ithaca, has two trees of it set in the spring of 1867, at two years of age, and they bore apples in 1870 and appear to be full of blossom buds for another crop. The Haas apple (Gros Pomier) is another very hardy variety well tested in this climate. The following persons have it in fruit: Mr. A. S. Neff, E. D. Clark, Levi Houts, and several gentlemen in the town of Sylvan. The Haas apple seems to be sufficiently hardy to stand winter even in the most unsuitable places. The Red Romanite is another extra hardy sort. Mr. R. L. Carver of Port Andrew, has a tree that bore a crop of six bushels at about nine years of age. So many trees have been winter-killed that it is very difficult to determine from the reports what are proving hardy. Sorts that prove hardy with care will prove tender with neglect, and trees will prove hardy on the ridges that fail in the valleys. It would seem to be a safe criterion to go by, that where one tree succeeds, another of the same sort under the same circumstances, will succeed.

SIBERIAN APPLES.

These appear hardy everywhere in the county. A large number of the smaller varieties are in fruit. Some of the improved varieties, such as the Transcendent and Hyslop are coming into fruit and excite the admiration of all who see them. When it is understood that they are the richest class of apples they will doubtless become more popular than ever. Only one of the reports, that of R. L. Carver, gives any data referring to this class of apples. He has four Transcendent and four Hyslop, about seven years old, that bore one-half bushel each in 1869, and he thinks they set one bushel each in 1870, about one-half being lost by wind storm. He has the Golden Beauty, but does not think the fruit valuable. Mr. S. Freeborn has the largest collection of this class of apple in the county, he having about eight kinds, bearing size, all hardy and sound, and twenty or more varieties in propagation. The trees of this class make fine stocks for top grafting; yet but few of the many small varieties are thus treated. Their rapidity of growth, and perfect hardihood, render them fit for that purpose; and they are worth all they have cost, for that purpose alone. I have found trees of this class in fruit sound and healthy, on almost all kinds of soils and in most all situations. Several new Siberians have been originated, and a good many more are now growing in the county, and nearly every one proves perfectly hardy, and some will doubtless produce valuable fruit. The Sylvan Sweet Crab, originated by Mr. C. P. Alling of Sylvan, appears to be very valuable, and will doubtless encourage others to try seedling Siberians.

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[NOTE.—The following paper was read before the society, but omitted from its proper place because the MS. was retained by Mr. PLUMB until that portion of the Transactions were in type].

PRUNING—PRINCIPLES AND PRACTICE.

BY J. C. PLUMB.

There is probably no subject of such vital importance to the nurseryman and fruit-grower which has received so little careful study, and correct theory on scientific basis, as the topic before me. That it is one that has much to do with the present and ultimate success of the tree, all will admit; but when we look at the teaching and practice of the horticultural world, we find confusion and variance without end, even the most opposite modes and reasons for the same ends; and so we are left without fixed principles to guide us in this art, by which we seek to improve nature herself. This being so, how much do we owe to the kindly yielding of plant-life to our caprice, for the little success we call ours to-day. But need this be? May we not have some simple rules of practice which shall hold good for like purposes, seasons and results?

To this end I will briefly present some of the results of careful study and experience-teaching: 1st, of the object of pruning; 2d, of the methods; 3d, of the time for this work, together with results and observations.

Under the first general head, we prune to secure *desired form;* length of trunk; direction and number of branches and their ultimate extention. We prune to secure *fruitfulness*, or to lessen its production, and also to secure its equal distribution upon the tree. We prune to *concentrate vital action* during the period of growth upon a less area, in order to develop a constitutional vigor, and a renewed hardihood; also, to renew the vital forces by creating new demands, and new avenues of supply of the nourishing fluids. And there is doubtless another object with some in pruning, which may be termed the "George Washington-and-his-hatchet" motive.

These three named objects, probably cover all the legitimate ends of pruning, and may be summed up in three words: *form, fruitage, vitality.*

Under the first of these subdivisions we have in nature as many forms as we have varieties, hence the absurdity of an attempt to train *all* after the *same* model. If we but look into your orchard of one hundred ungrafted, unpruned trees, we find as many forms as varieties; each true to its own instincts or habits of growth; and if we should graft another hundred seedlings from one of these we would find them true to the parent trees in general outline. So true is this that an observant cultivator will readily distinguish his favorities by their outline, even by moonlight often times. The lesson here is that we should have no fixed model of form for our trees but endeavor to train them so that each may be true to itself—each perfect in its own style of development; this might be illustrated by diagrams showing the natural forms of varieties; we will but call attention to the Sweet June and Paradise Winter Sweet, with their conical forms and strong upward tendencies, the Fameuse and Golden Russet with their round heads; the Tallman Sweet and Belle-

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flower with their wide-spreading, strong arms, each holding to its peculiar model of growth in all climes and in the face of all the abusive hacking of unthinking tree-trimmers. Again, for what purpose is the trunk or body of the tree? For ship masts and saw logs says one. Aye, but what fruit does your liberty pole bear? The fruit of aspiring ambition it may be, but not the *pomme* which may daily minister to the nourishment of earth's millions of humanity. If the earth, like the ship in mid ocean, were dependent upon the uplifting of its lofty trees for its motion, then we would say help on the good work, and be content with less fruit, but since "blessed are the meek" has been spoken, with a promise, I protest against the whole race o top-lifters. The trunk of a fruit tree is only a base of out-growth for the support and more convenient renewal of the fruit branches and should be only of sufficient length to answer these ends. Life, health, culture, fruitage, all are on one side of the scale in favor of short bodies and low tops.

Again, the direction and number of the branches of a tree may be regulated by the careful pruner, provided he does not undertake to change the native style of the variety; direction being the result of a fixed habit, as I have before said. Therefore, if any limb is found interfering with its fellows from being out of its place, cut it off. A tree should have as many branches as it can well find room for and nourish, but the head of the tree should never be formed by three or more branches emerging from the same height, to form the only arms of the tree; but there should be a succession of side arms, emerging from an ascending main center, giving easy balance to the several members of this "corporation," so to speak; giving the greatest combination of strength, pliability and durability to the structure, with a basis for future renewal of young wood, of which we will hereafter speak; also two shoots or branches of equal strength should never be allowed to grow more than one year side by side; one of them should be nipped when young or cut off at any time thereafter, as they will eventually collide, and cause death to part or the whole of both, and carry disease to parts below. Every branch should leave the main trunk, or its fellow branch at an angle of not less than 45° and the juncture to be like that of the thumb to the hand. If this is insisted on by the pruner from first to last, in the nursery and in the orchard, we will have done with the greater part of the splitting down from winds and fruitage now so common every where. Again, Warder, on extension, well says, "Never trim to increase the height of a tree." The tendency in all wood-growth is ever upward and onward, resulting in long, naked limbs, with dormant spaces exposed to the rays of the sun and attacks of insects. This extension must be checked by the nipping or cutting back style of pruning, and not only in youth, but to create a second youth, when its vital forces fail to reach the extremities properly and promptly return their assimilated nourishment; but of this hereafter. "Cut back and not trim up," then, should be our maxim.

FRUITAGE.—Under my second subdivision, there is much diversity between theory and practice. Any system of pruning to develop fruit must be managed with great care, or the results will be the reverse of desire. Fruitage is, in a certain sense, antagonistic to extensions, secured at its expense, and should not be encouraged, or forced too early, upon the tree. This well recognized principle relating to organized beings I will not argue. Any system of forcing the premature development of

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fruit, is a dwarfing process. The tree is a distinct organization, with its infancy, youth, maturity and age. Dwarfing is but a process of shortening existence, crowding youth into a premature maturity, with the certainty of old age and decay following quick in the track. But "we want fruit quick" is the cry, and so they, not we, grow the pear upon quince and apple upon the paradise. These dissimilar stocks cut off the return flow of the thickened and elaborated juices, starving the root, but forcing an early development of fruit. This is but a species of pruning, equivalent to "ringing" and "stringing" a particular branch for the same purpose and with the same result. Dry summers, followed by a moist autumn, are precursors of abundant fruit the following year. And why? Because the extension of the tree is checked by the summer drought, and during the period of moisture following, an abundant supply of nutrition is used to produce fruit germs, and the forces needful for their development the succeeding year. Now the lesson here is not to "threaten the life of the tree" as some say, but rather check in midsummer the extensive growth; then allow the moisture of autumn to produce its effects as before stated. How? Root-pruning in midsummer, starving by drought, or a crop of grass has doubtless the same in effect; nipping the ends of all growing shoots on the tree in July or August will tend to the same result, provided, if carried too far, it will, like the moisture of autumn, cause a premature fall-blooming, or pushing of otherwise spring bloom. This branch of pruning is too little understood and implies too much labor to be made generally available, but affords an interesting field for experiment and observation, and in consideration of the increasing demand of the age for "quick returns," we may well make this a careful study. The matter of lessening the fruit crop by a judicious and thorough thinning of the fruit buds and spurs, or by cutting back whole branches, is also one full of interest, promising two benefits, viz: The increase of size and flavor of the remaining fruit, and the habit of annual bearing, so much desired, but so seldom gained by our common practice of allowing an over-crop whenever it presents itself. This, with an equal distribution, which may also be gained by a proper system of "shortening in" and removal of some of the rampant wood of the tree each year, are processes worthy of the most careful experiment.

Under the third subdivision,

VITALITY—an almost unexplored field, lies before me, and I may only tread upon its borders, but it is full of instruction, and rich in good to those who make a practical use of its teachings. Taking the tree as a living organism, with vital forces, and vital centres, let us inquire what sort of a structure will be fitted for the highest end of the tree, to insure the combination of the most valuable qualities, such as vigor, hardiness and long life, with productiveness and high quality of fruit. The phenomonon of vital action is beyond my province to explain, whether this force lies in the plant, enabling it to appropriate elements to suit its wants, or whether the plant is only a mechanical structure, deriving its life and development from the action of outside elements, under the direction of the Infinite hand. I think there is a combination of all these forces, and our practical point is, to secure the help of all these elements, and I will name some principles to guide in our practice. In the law of demand and supply, next to good and abundant feed,

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comes the rule, "have them close together." Long lines of transportation between producer and consumer eat up all the profits. Under the theory of vital force innate to the plant, I hold that it resides not alone in the crown, as the seat of life, the Comstock theory of old, but pervades the whole structure, and is largely stored up in the nodes and junctures of the twigs with the branches. But especially is every bud a life centre, with dormant energies in store for its own or other's good; hence every available space of the upper structure of a tree should be furnished with these life-centres, store-houses of vital force, garnered against a time of need, at hand and not afar off to be wasted on the way, or consumed by the go-betweens of transportation.

Again, vital power is undoubtedly something that can be not only saved, but as a growing principle can be generated, and the original stock added to, or increased by frequent returns to youthful life. For example, an old tree that has been ill-fed and ill-pruned to a lank specimen of extenuated barrenness, may, by a severe cutting back, so as to cause a renewal of the entire top of the tree, become young in its growth and fruiting, repairing wounds and even long standing injuries with a hearty will and power astonishing to the novice. The secret is this: new demands create new energies and powers; concentration of these new forces upon less space, for the time being, gives rest and recuperation, and these imply augmented, renewed vitality for the future.

With these outlines of principles I will proceed to my second general head,

METHOD.—Nature prunes by the superseding system. Each accession of branch to the trunk receiving from its position more sunlight than its predecessor below, the effect is in time to cause the death of the lower limbs from inaction. In this way are the firs of Washington territory pruned from the tiny seedlings to trunks of 200 feet without a limb. Noble work, truly, but how vastly we could improve upon this rude process, by simply lopping these dormant branches a decade or so before they fall by decay. Nature's pruning—there never was a case of it, but could have been improved by art. The method to be followed in every case is dependent upon the object, species, and perhaps the variety of the species. Thus, for timber we had better assist in the extension of the trunk and arms by a reasonable trimming off of the lower branches; but for fruit we want a different model, and in this climate of hot suns and high winds, with extremes of temperature unknown in any other habitable country, we must prune low and renew often. Even with the smaller fruits—the grape, the raspberry, and the currant—our best experimenters now agree that health, vigor and productiveness are favored by low heads, with occasional renewal from the main stem.

As the details of practice would be tedious in this paper, I will speak of the third general topic, namely:

TIME TO PRUNE AND CORRESPONDING RESULTS.—Here as great diversity exists as in the methods. The tree-planters of Philadelphia and south, advocate doing all pruning in winter, as safe, and because that is a season of leisure; New England and New York prefer the early spring; we of the northwest are so much mixed that we take any time, or no time, as we can make it convenient; but fortunately for the safety of our trees, the latter is generally the chosen way.

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No pruning is better than mutilation. Every nurseryman should know the value of leaves in the elaboration of the crude sap, fitting it for nutrition, but I fear many, from a want of, or by considering the value of every leaf, have now, after the drought of 1870, to mourn the loss of root-growth, from the usual pruning of early summer. If any were so fortunate as to have neglected the usual June pruning, and not tried to make up for it in July, they have with the writer, to rejoice in the finest roots of many a year, and all within saving distance of the tree. The lesson here is this: We must encourage the lowest possible height of forming the future top, by our practice and teaching, consistent with an enlightened public sentiment, and remember too, that we are the educators of the people. We should also refrain from all heavy pruning during the period of growth, but from the first of June till the fall of the leaf, use the hand only to rub off and nip back such growths as may not be desirable. This will require promptness in the early and frequent labor of pruning, but the result will be an increased vigor and health of root and branch. If, in this process, any subordinate shoots become strong wood, either from neglect or choice, let them remain until the autumn, when their work of elaboration is done for the season, then cut freely as you may fancy.

The autumn is the time for all heavy pruning, except in the case of trees lifted in spring, which may, and generally should, be cut back to such diminusion at the top as will preserve the balance with the root. The dormant state of the tree will in this case be favorable to the proper hardening of the wood. The time for pruning, with reference to the natural preservation of the wood, is when the juices are in the thickening process, when the cambium is rapidly forming into woody matter. This is in early autumu. Wounds made then will become hardened before the changes of winter, and will seldom decay before being fully covered by the cicatrice of future growth. This will prove true to a less degree with early and mid-summer pruning, but from other and more weighty reasons, given before, heavy pruning should not be practiced at that time. Heavy prunning may be continued until mid-winter with safety; and even until March in this northern region, provided the surface of the cut is by any process rendered impervious to the exhalation or absorption of fluids. This nature does, as before described, by furnishing its own cement, at certain seasons, or in certain conditions of the tree; but it is well known that during the first flow of sap in early spring the juices are so abundant and watery that they do not harden on exposure to the air, but flow out and over the exterior surface, causing decay most rapidly. Therefore we should avoid spring pruning when possible. But here we may bring art to our help. I have seared fresh wounds with a hot iron with excellent effect; I have also practiced largely the application of hot wax, prepared as for out-door grafting but a little harder, and kept nearly at the boiling point by a small furnace of coals. I have abundant testimony of the value of a simple compound of gum shellac and alcohol of the consistency of mucilage, which should be well corked when not in use, and which may be applied with a brush or swab to cuts large or small, immediately, and will, by the evaporation of the spirit, become a cement impervious to air and moisture, and remain intact for years; but when excessive bleeding is feared, I would rely on the hot wax for large wounds. I have also used common "mineral paint" with success in the spring pruning.

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In the consideration of this subject, I have purposely, omitted details, for fear of occupying too much space. But if we have the correct principles clearly in our minds, we may enter upon the details of this work with the surety of success which is promised those who obey the laws of God in nature.

THE VACCINIUM FAMILY.

BLUEBERRIES.

BY J. G. KNAPP, MADISON.

What have you got to say of them? A good deal and in favor of their growth, and cultivation. Do not men cultivate cranberries, and make money at the business? But cranberries grow in swamps, and cannot in this state be grown much elsewhere. They cannot be grown in all swamps in all parts of this state. Naturally the plant is limited to the northern belt of the state, and from what is now known of the nature of the plant, its limits cannot well be extended much north and south of this natural belt. Blueberries grow along the same belt of land, but more extensively than the cranberries. They grow on the dry lands, on the sands, where almost nothing else grows. These plants will take entire possession of the land on which they grow, if permitted to do so. When they shall be thus set, they will produce as many bushels to the acre as do the cranberries of which we hear so much said of their profitableness.

The two plants are in the same natural family, *vaccinium*. The one sour, the other with just acid enough not to be insipid. The one requires pound for pound of sugar to render them palatable, the other are by nature food for man, beast and bird. The one can be preserved by cooking pound and pound, and canning air tight. The other dries more easily than any other berry, and with a small quantity of acid, they can be made to rival the Zante currants for all culinary purposes. Their season is longer than any other berry we have, and they are as regularly sought for. No berry carries better to market, unless boxed in such quantities as to crush by their own weight.

All the care they want is a piece of sand too barren for grass, or oak grubs, and just so much tending as shall give them all the sunshine. Take such a piece of land, cover it with bushes, give them their liberty the year round, without the interference of goat or sheep, and if the owner will keep off the birds, hens and turkeys and other thieves, and he has nothing to do but harvest the crop. It makes its own manure, and ties its own sand firmer than a mortgage. All vacancies will fill from new plants, or may be filled by hand, till they possess the entire surface. There are thousands and thousands of acres in Wisconsin that are to-day valueless, that might be made to yield a hundred or more bushels each, if planted to this humble plant. The plant here alluded to is the low bush blueberry, *Vaccinium Pennsylvanicum* (Grey) and variety *Augustifolium*, four to twelve inches high, generally about, six, bearing an abundance of large and sweet berries, ripening in Portage county early in July. This plant will not do well on any soil but extremely sandy

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There is another plant of the same family, or perhaps two, that grow naturally in moist lands, and known as swamp blueberries, and high bush, being sometime ten feet high, but commonly between four and six feet. These are the *V. pallidum*, pale, and *V. corymbosum*, of a deep blue. The last is the best and most prolific, and most acid and pleasant tasted of the family. There is but little doubt but this plant may be grown on the rich prairie grounds of this state, and especially on the drained marshes; as we are told in the June number of the *Pomologist*, 1871, p. 149, that in 1864, plants were brought from New Hampshire, to Des Moines, and that they are in fruit this year. There is scarcely a question of the hardiness of this variety; in productiveness it will rival the currant itself, and greatly exceed it in value of the fruit.

CRANBERRY CULTURE.

BY G. N. SMITH, OF BERLIN, WIS.

The lands from which the cranberries marketed at this point are gathered are situated a few miles to the west and northwest of us, and may be described as a succession of marshes or rather an extensive marsh, interspersed with islands of timbered land, varying in extent from hundreds to thousands of acres. It is difficult to estimate the whole number of acres comprised in this marsh, but it will probably reach, if not exceed, fifteen thousand. About five thousand acres are included in the town of Aurora, from eight to nine thousand in Warren, and the balance in Marion. There are a few hundred acres of same description of land in the town of Seneca, directly west of us. But a few years ago these marsh lands were considered almost worthless, with the exception of small portions along the borders yielding grass. They were covered mostly with a thin growth of wire grass and small tamarack, with occasional patches of cranberry vines, and were so wet that no animal dare venture far out on them, and in some places it was dangerous for man. These lands being a portion of the swamp lands donated to the state by the general government, created a small drainage fund in the towns in which the lands lie; and consequently some twelve or fifteen years ago, the town of Aurora commenced a ditch at the junction of this marsh with Fox river through lands of which the late Edward Sackett of Chicago accidentally became the owner. The effect of the drainage was to produce a vigorous growth of cranberry vines and annual crops of fruit. This induced Mr. Sackett to extend the ditches and build a dam for flowage; and the result exceeded his most sanguine expectations, for he was enabled to gather largely increased crops; and at the time of his death, which occurred in the early winter of 1864, he was realizing a large annual income from his lands. There were others in the vicinity who soon began to perceive that an investment in these swamp lands promised a large return for the expended capital; and accordingly the lands were rapidly purchased of the state—the towns were enabled to extend the ditches, which, together with the improvements made by the owners, has rendered this branch of fruit culture of greater value and far more profitable than any other in the state, on the same acreage; the crop amounted the past season to eleven thousand barrels or thirty-three thousand bushels; and it has realized the sum of

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not less than $120,000. To obtain this amount from wheat, it would require, estimating the yield at ten bushels per acre, and the price at one dollar per bushel, twelve thousand acres; or from apples at three dollars per barrel, it would require forty thousand barrels. These comparisons will give perhaps a better idea of the value of the cranberry crop to the productive industry of the state.

From the foregoing it will be seen that the Wisconsin cranberry-growers have had but few years' experience, in what may be called the cultivation of this fruit; but it is well understood by those most experienced, that certain requisites are necessary to secure a vigorous growth of vines and annual crops. *First*, a deep soil of swamp muck combined with sand, resting on a soil of sand or blue clay. *Second*, the land so situated as to be controlled as to flowage and thorough drainage. *Third*, an ample supply of water standing on the marsh from two to four inches deep as practised by eastern cranberry-growers, is not only necessary on our marshes, as has been fully demonstrated for several years in the growing of the vines and in the quantity and size of the berries. A thorough drainage of the marsh during the warm season, and more especially during August and September, and flowing at least from one to two feet in depth through the winter and spring months, seem to be important requisites. The best drained lands produce the largest and deepest colored fruit, while the flowing destroys the insects and their germs, also weeds and grasses, and serves as a protection to the vines.

In planting the vines, comparatively little was done until last fall, when several hundred acres were set, and this will be continued the coming spring. No preparation of the land is necessary on open marsh with but a light growth of wire grass on it. The sod is punctured and one or more vines inserted and pressed down with the foot, and seldom a plant fails to grow, and they often produce a few berries the first season after setting—the plant is of so hardy and vigorous habit that the fruit bud is not affected by removal. The third season a small crop may be expected, and by the fifth or sixth year the vines will have taken entire possession of the ground and a paying crop may be gathered. The difficulties cranberry-growers have to condend with are less than with almost any other kind of fruit. Yet the cranberry has its enemies and they must be attended to. The worst of all is the insect known as the cranberry worm. In appearance it is almost identical with the leaf-roller found on the apple. The miller generally comes about the time of the blossoms, say from the middle of June to the first of July, and lays its eggs in the top of the young vines or that part producing the fruit. In a few days, more or less, according to the temperature of the air, the worm appears, and like all plant-eating insects, is gifted with a voracious appetite and an ablity to indulge in it. The consequence is that, if not checked, the vine is rapidly stripped of its foliage and the crop destroyed. This worm, or one similar, works somewhat on the berry, but thus far has not proved very troublesome. The only known remedy for the destruction of insects, is the effectual flooding of the marshes, and that seems to be pretty sure.

It is safe to assert that the cranberry is natural to the whole extent of the marsh mentioned, but that all of it can be successfully used for that purpose is not presumed, for the reason that it would be difficult to control parts of it as to flowage and drainage; yet there is a large field open for the business, with the promise of

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large returns on capital invested; for the crop per acre exceeds in value any other that can be raised. Several growers the past season have gathered full two hundred bushels per acre, receiving therefor six hundred dollars. The expense of picking, cleaning and marketing did not exceed, if it equaled one-third, leaving four hundred dollars net profit, as no labor or expense was incurred in planting the land. A much larger rate per acre has been realized in places where the vines had full possession and were of sufficient age to bear a full crop. It is no exaggeration to say that three hundred bushels per acre can be raised on lands in right condition, and when the season is favorable. It is expected there will be a largely increased production of this fruit, and of an over-production the growers have no fears, as the demand for years has equaled the supply, and the last crop has been sold at prices higher than any former one, and considering the small proportion of land adapted to the business, compared to the extent of territory and population wanting the fruit, its long keeping qualities allowing it to be transported to all countries and climes, it will readily be seen that the cranberry-grower may justly consider his business established, if properly conducted, on a sure foundation. If the price should be reduced to one-half its present value, the business would then be more profitable than any other branch of fruit-growing.

A brief statement of the number of bushels gathered by some of the largest growers, will give some idea of the value of a bearing cranberry marsh:

Carey Brothers gathered and sold 3,400 barrels, average price $11 per bbl.....	$37,400 00
Deduct one-third for gathering, cleaning, barrels, etc.....	12,466 66
Net income for 1870.....	$24,933 33
The marsh belonging to the Sackett estate yielded 2,600 barrels, estimate $11 (now quoted at $17 per bbl, in Chicago).....	$28,600 00
One-third off.....	9,533 33
Net income for 1870.....	$19,066 66

Ruddock, Mason & Co., 800 barrels, netted over $5,000. This marsh is comparatively new and promises to be one of the best.

Many owners of forty acre lots, with a small part of the land yet in bearing, realized from one to three thousand dollars net.

THE ISOTHERMAL LINES OF WISCONSIN.

BY J. G. KNAPP.

Wisconsin and Michigan lie east and west of each other, separated only by the waters of Lake Michigan. The same lines of latitude, and the same isotherms pass through both states; peaches, pears and tender apple trees do well in Michigan, but they fail in Wisconsin. In the one apples are easily produced in abundance; in the other they can scarcely be produced, and only thrive with great care and in sheltered localities; and even with those advantages, resort must be had to the most hardy varieties. Some one will ask; why this difference? The Lake is narrow; a steamer crosses it in its widest place in six or eight hours. I

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cannot give a reason for this disagreement. Why is it so? Who can tell?" Such is the language of almost every man you meet. To answer some of those inquiries in part is what I propose in this paper.

For many ages, even among well informed men zones of climate and zones of latitude were supposed to be identical; and even yet most of the school geographers and others, who ought to teach better things, confound the one with the other. Whenever such persons mean to express the idea, that two places have the same climatical conditions, and especially of heat and cold, they assert that the places lie in the same latitude. So too, with equal ignorance most persons consult the maps, on which lines of latitude, not lines of temperature, are marked, and finding two places situated east and west of each other, they say of them, they have similar or identical climates. To those who have most carefully studied the laws of climatology, the untruth of these expressions, is apparent. Every well informed man knows, it can be easily demonstrated that no two places lying at a distance of five degrees of any great circle from each other, have the same amount of heat at the different seasons of the year; even where they may have the same average temperature for the year. These changes are manifested by the changes in the vegetable growth of the two places selected.

The invention of the thermometer, by which the degrees of heat could be measured, led to the recording of that heat for days of the year, at many places. From those records, the climatologists have averaged the temperature of the places where the observations were taken, and the records made; thus they soon discovered that certain places agreed in the averages for the year, and for the seasons of the year. They then joined those places that agreed, and thus produced isothermal lines on the map. The most important of these are those for the year, and for the seasons of summer and winter; and they are called respectively *isotherms*, *isotheres* and *isochimenes*. The general term *isothermal* line, is used indiscriminately for each of the seasons, or the year, and qualified where a special season is to be designated.

The first maps on which the isothermal lines are drawn, and thus showing to the eye what places agreed in their temperature, were published in 1848, by Humbolt and Dove. The idea originated with Humbolt, as early as 1819; but the computations were made, and the maps constructed by Dove. Although he had, at that time the copious observations taken and recorded at the universities and observatories of Europe, yet for much of the map, they were meagre; many points were remote from each other, and not unfrequently the terms of observation were short, and for many points only averages by calculation, were established; hence many places were of necessity joined without such positive data as could have been desired; the same difficulty still exists in a great measure. The publication, so recently, and in the French language, may account in part for the fact that so little is known by the generality of the people of this country, upon this subject. Moreover, the very expressions of all languages, and the preconceived ideas of men, had to be changed to conform to this new step in science. No wonder that twenty-two years has not effected it.

Prior to 1848 Prof. Espy had been discussing the dynamics of storms and winds,

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and had pretty well fixed the direction of the prevailing winds in the United States; and Maury was engaged on the currents of winds and water at sea. After the appearance of the maps of Humbolt and Dove, Blodgett, under the direction of Prof. Henry of the Smithsonian Institute, undertook the discussion of the records of climate, as connected with thermology and Hygrometry; using for that purpose the vast amount of material that had accumulated in the office of the Surgeon General of the United States from 1819. These observations had been taken for the purpose of determining the sanatory status of the different military stations. In 1856 these calculations had so far advanced, that Prof. Henry prepared a paper on the subject of the isothermal lines of the United States, accompanied by a map, on which they are delineated. These appeared in the Agricultural Report of the Patent Office for that year. This very able paper and map had some serious defects, as a popular work, and is now only referred to by the strictly scientific, for reference. Next year, 1857, Blodgett published his work on Climatology, accompanied by extensive and very accurate maps, considering the material at his commad, showing the isothermals in their actual positions, on the surface of the earth. His book, however, was too extensive for general circulation, and too scientific for popular reading, and is now out of print and not generally known. In 1861, Dr. J. W. Hoyt, in his Report, as Secretary of the State Agricultural Society, made to the governor of this state, referred to the matter of the isothermal lines, so far as Wisconsin was concerned; and also prepared a map showing the lines. He called attention to the crossing of these lines in this state, and urged further observations upon the subject. This map correct, for the data he possessed, still needed correction. It will be found in the Transactions of the Society for that year. In 1868, I. A. Lapham, LL. D., of Milwaukee, read a paper before the Academy of Sciences of Chicago, accompanied by a map of the isotheres and isochimens for this state during July and January. His map is probably as accurate as it can be made from the thermometrical observations yet taken and reduced. He used observations taken at sixty places, in this state, by ninety-two observers, and covering an aggregate of three hundred and fifty years, and more than thirty years of absolute time. This map forms the foundation of the one accompanying this paper, the odd numbered lines being omitted; and upon it, lines intended to designate the northern boundary of the belt of dent corn, Concord grape, and other plants that correspond to them, in requiring a certain degree of temperature continued for a certain period of time; and also the northern belt of the most hardy pears, and the Early Richmond and other Kentish cherries.

All these maps, though disagreeing in some measure, agree in one point. All show the remarkable crossing delineated by these two important northern boundary lines. They give to us a fact—a climatical phenomena—established beyond any doubt. This phenomena exerts a vast influence upon the vegetable productions of the region which it affects—that region is the state of Wisconsin.

When white men first saw the southern portion of this state, it was unlike any other region east of lake Michigan; instead of thick woods, here were groves of woods and prairies intermingled; even the oak openings were clothed with grasses, and all was ready for the plow, or could easily be made so. Here was found a

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climate incomprehensible, even to those who have resided the longest in it; and to those who have not resided here, or have not made it a special study, it is unknown to-day. Such extremes of heat and cold, of sudden changes, where all signs from other regions, fail to index the future condition of the weather, can be found in no other country of the same extent, as this. To no other region can the lessons of scientific knowledge be more efficiently applied. No other people need so much information on the subject of their climate. If the residents in this region are thus in need of information in regard to their own climate, what shall we say of those who are more ignorant still, and yet attempt to write and talk about it, and to give rules for the conduct of the cultivators of this region? However proper those rules may be when applied in regions possessed of other and different climates, when they are applied here, they are not only useless, but are absolutely injurious and pernicious. Rules, such as are here alluded to, may be found laid down in the agricultural books, magazines and newspapers of the day, and they will be accompanied with the idea expressed or implied, that they are applicable to all places lying in this latitude, and are to be followed as unbendingly as if they were statute enactments, with penalties attached to their violations.

The immigrants to this region entered it with the same or perhaps more vague ideas about its climate, than those which now prevail in the eastern states and in Europe; because by sad experience men have learned that there is a difference, if they do not know what it is. The immigrant has acted here on the rules he learned in the land of his nativity and education—rules still taught there and found adapted to that climate. People may carry their language, modes of dress, and some of their seeds with them from one country to another; but they cannot carry the climate, nor the soils, nor rivers, nor seas, nor mountains, nor plains—all these they must leave behind. In the new region they will find new soils, rivers, seas, mountains and plains; and above all, new climatical conditions will exist in the new region. As these new conditions must require the applications of new rules for the conduct of the cultivator, he must needs know the new conditions; whether we know it it or not, the new conditions are here, and the old rules have and must forever fail; and people have wondered at the failure; they have revised their work, and can find in it no deviations from the rules. Without suspecting that any errors exist in the rules, men follow them; they only seek to find errors in the work, and revise that. Hence we see men here ditch lands already parched; trench soils, deeper than the trenches; lay drain tiles in gravel and sand beds, where water cannot accumulate; ridge corn lands to carry off surplus waters, where water is deficient. They rear their trees in nurseries according to rule, plant, hoe and tend them by the book, but the rain has been withheld; snows have not sheeted the ground; nor moist atmosphere condensed in dews, clouds have not shaded the summer sun. Hot winds have blown upon the trees; the leaves have withered and the trees perished; or, if by chance, they have survived the extremes of summer, the severity of winter has killed them. They see all these things, and yet never suspect that the peculiarities of climate have anything to do with it, because they have not seen it in a book, or read of it in a paper.

The foreign and domestic exponents of climatic laws, look on the maps of the

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United States, and see the same lines of latitude cross this state and those east of it; they may also know that the same annual isotherms pass over them. They know that apples, pears, plums, and even peaches grow from Lake Michigan to Maine, with little or no danger of winter-killing; therefore, they jump to the conclusion that the same fruits must grow here on the west of that lake, if their rules of planting, tending and trimming be followed. Men here have done the same kind of jumping. We have a striking instance of the ignorance that prevails among our people, given in an editorial of the *Western Farmer* of September 17, 1870; that paper says: "A short time since, a very intelligent man, who had resided in this state some years, and who had read the papers, astonished us by the announcement, that he was intending to set out an orchard of Greenings, Baldwins and Spitzenburgs; and on inquiry, we found that he was entirely ignorant of the fact, that those varieties would not thrive here. 'They do well in Michigan, then why not here?' was his reasoning on the subject."

How many persons will you meet, who can give another or better reason? There is scarcely a man, who desires to plant an orchard, and who consults only his maps, the fruit books, or the papers, especially the eastern ones, who would not ask the same questions; and who would not refuse to heed the warnings of any one who should merely state that these, his favorite trees, would not survive our winters. Having no other guides for their conduct, men here follow these inapplicable rules; and hence experiments are tried over and over, in the same way, with the same inevitable results; failure succeeds failure. Money and time are lavishly expended in trying again what others have tried and failed in. If we were to ask them why they act thus, we should find they can frame for themselves no other or better excuse, than that Prof. —— has advised to do so; and they believe others have failed because they did not follow the rules taught in the east. The truth is, many of them choose to deceive themselves into a belief of what they desire to have true. They may console themselves with the idea, that some strange and dishonest tree peddler has urged them to purchase some rare, or choice tree—choice in other climates, but worthless here. It may be a consolation to have some one to scold about; but I greatly doubt, if that fact will refund the money spent, or pay for the time and labor given, in adding another to the list of failures.

The remedy for these failures lies in studying the conditions of the climate, and following the lessons taught by that Great Teacher, rather, than in obeying rules announced by men regardless or ignorant of those laws, and which not unfrequently are positive violations of the laws of our climate. In the one case success may be expected; in the other, the penalty of the violated laws of climate are sure to be felt; and because we know that men, who will not listen to warnings that have the semblance of naked statements, will yet be convinced if unanswerable arguments be given. The cause of the perishing of these tender trees will be found in the divergence of the isochimenes, or winter-lines, as they descend from the northeast to the southwest over this state. The cause for our great success in growing grapes, melons and other semi-tropical plants, which can be protected from the colds of winter, may be found also in the divergence of the isotheres or summer-lines as they ascend from the southeast to the northwest.

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The even temperature of the three summer and three winter months in Wisconsin is such, that a line averaged for the former will not vary any great amount from the month of July; and the line averaged for the latter will nearly correspond to the line for January. Therefore we shall be near the truth by assuming that for most of this state, the isotheres, or lines for ninety days in summer, will coincide with the lines for July, and that the isochimenes, or lines for ninety days in winter, will coincide with the lines for January. The greatest disturbing cause may be attributed to the influence of lake Michigan. This lake is a large body of open water, which in summer is colder than the atmosphere, and gives rise to almost nightly lake breezes, that reach some distance inland and render the night air cool. So great is this influence, that the dent corn does not thrive and ripen well anywhere on the west coast; and there is a marked difference in the time all plants come forward, whether near the lake, or inland. The reverse of this influence is felt, in some degree, in the winter. The lake winds carry the line of dent corn down almost parallel with the shore of the lake and around its southern end in Illinois. That variety of corn requires an average temperature of seventy degrees Fahrenheit durng three months. The Concord grape requires the same temperature for the same period, and the Isabella requires ten days more. This line is traced on the map by means of observations on the vegetations, corresponding to the dent corn, and is placed as far north as the years will average; but in locating it, no records have been kept, and it is only intended generally to represent an idea, in order to call attention to an important fact; local causes will also give to it many sinuosities.

When this isothere is delineated on a map of the United States, it will be drawn around the end of lake Michigan, and about fifteen miles from it, after which it will follow near the line of the Southern Michigan Railroad, and to the northwest angle of lake Erie, thence to Cleveland and Pittsburg. After passing the mountains, it can be traced along the Pennsylvania Central road by Harrisburg, thence east through New Jersey. It will be perceived that this line thus drawn, will divide the dent corn from the smaller and earlier flint varieties; the grapes of lake Erie place the melons of Pennsylvania and New Jersey on the southwest. The bend, which had in reality commenced at Pittsburg, continues till the valley of the Red river has been reached, after which it passes by the Assinaboine to the meridian of the west boundary of Dakota, where it turns suddenly south, keeping east of and near the base of the mountains to the 35th parallel, where it crosses and again bears northerly around the Great Salt lake in Utah, after which its course is southwesterly till the Sierras Nevadas are crossed, and making many bends in California, it reaches the Pacific near San Diego.

The line of the northern limit of the pears and cherries, and some other plants, that perish at about the same low degree of temperature, corresponds nearly to a winter temperature of 20 degrees Far. On the east this line passes up through the Straits of Mackanaw, thence nearly east, it crosses the St. Lawrence below or near Montreal, over the northern mountains of Maine and New Brunswick to Prince Edwards Island. In its course it does not touch peninsular Michigan, New York or New England. except the unsettled portion of Maine. On the west this isochimene continues to descend in Iowa to Fort Dodge, after which it rises slowly until it gains

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the northwest angle of Dakota, from whence, after passing the mountains, it enters the Pacific near Behrings Straits. This line, on the west, does not strike the valley of Salt Lake, nor the state or Oregon. Apple trees that perish on this line, are seldom winter killed on a line four degrees warmer.

Both these lines are greatly affected by local causes, such as sheltered valleys, protecting groves of trees, high mountains, knobs and ridges, open grounds and bodies of water. The sinuosites thus produced cannot be determined at present for want of sufficient observations properly annoted.

Another important line will be alluded to, and requires a description, that is the line of equal temperature for the year, or the isotherm of 45 degrees Far. This line will be represented if drawn nearly east and west, or from the centre of Vernon county to the city of Sheboygan. On the east this isotherm follows near a paralel of latitude to Portland, Maine. On the west it strikes a little lower, but after passing the Missouri it commences to rise to the north, and strikes the Pacific near the boundary between the United States and British America.

It will be observed that these three lines have crossed each other in this state, and again in Dakota; but whoever will take the trouble to follow them around the globe, as traced by Blodgett, or by Dove, will find that they do not cross again at any other point. The isotherm of 45 is always between the isothere of 70, and the isochimene of 20, though they approach very near in Asia. This is an important fact to remember, as to it may be attributed the anomolous condition of the climate in Wisconsin, Iowa and Minnesota, so unlike any other country. This climate with us becomes an important subject for study, which should be done on correct principles. If I can aid at all in such study, and induce knowledge of this peculiar climate of Wisconsin; assist others to guard against the effects of its unproptiousness, and improve its advantages; I shall accomplish all I may even hope for. But whether I shall present it as it deserves or not, the importance of the subject deserves careful thought and critical examination.

If we have not seen with our eyes, we have heard with our ears, or have read in books, of the great difference that exists in the climates of places on the same lines of latitude. Two such will be noted. Ireland and Newfoundland furnish us with strong examples of contrast. Both lie between the same paralels, in the same region of prevalent westerly winds; both are islands in the same Atlantic ocean, and of the same mean elevation above sea level. There the agreement ends, and the contrast begins. Ireland is on the west of a continent; Newfoundland is on the east of another. In Ireland the thermometer seldom sinks below the freezing point, or rises above 70 degrees. The westerly winds reach it after passing over an ocean, that has been warmed by the gulf stream; and been charged with moisture at the same time. That moisture falls in rains and dews on Ireland. Her meadows and pastures are always green, and give to her the pet name of "The Emerald Isle;" but her vegetable growths are always slow, for want of heat. The warm waters from the Gulf of Mexico, warmer than her atmosphere, beat constantly against her shores; her harbors are always open, and men bathe in her seas at all seasons of the year. Westerly winds also blow on Newfoundland, but they come from a continent of high mountains, covered during one-half the year, with snows and

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ice. In winter the thermometer ranges down to 40 degrees below zero. The cold Arctic waters from Baffin's Bay break around the shores of Newfoundland, and their icefloe ground on her beaches, and fill her bays. Her harbors are often closed with ice; and her seas are always too cold for bathing. Clouds and fogs exclude the sun's rays one-half the year; and her meadows are longer clothed in snows and ice, than in grasses and green herbage.

A still more striking contrast might be drawn between the coast of Norway and Labrador. The one is clad in vegetation, the other is barren from ice-bound soil. Orher striking contrasts might be drawn between places on the same parallels of latitude; between sea-islands and low lands, and lands elevated on the sides and summits of mountains; between regions swept by hot dry winds and by winds charged with moisture. The olive, the orange and the vine flourish in sight of mountains covered with annual snows. Regions where rains never fall, are separated from regions of daily showers, only by a mountain range. To the careful observer, the causes for these differences are manifest, and such alone are competent to deduce rules from such differing causes, by which the cultivators in these differing regions can be successfully governed and guided in their action. Indeed few men will have the inconsiderateness to assert that the inhabitants of each and all these regions should cultivate the same plants, in the same manner, in them all, solely on the ground that they lie on the same paarllel. Wisconsin is no exception to this rule.

Our history shows that we have done much, and we are making rapid progress in education, as to our climate and productions. I do not call to mind any region whose history carries such evidence of the force of ideas transported from region to region, as does the history of Wisconsin. The first settlers here were the French *voyageurs* from Quebec and Montreal. They could perceive no difference in the winters of this state, and the place of their nativity; and as apples would not grow there, they concluded they would not here, and they did not try the experiment; for the same reason they did not plant melons. They learned from the Indians to plant corn and beans; peas and wheat they brought with them from Canada. On the other hand the "Suckers," "Hoosiers" and "Corncrackers," who entered the state from the south, could see but little difference in the hot summers here, and those of Illinois, Indiana and Kentucky; and so believing that they could raise whatever grew in those states, these planted their dent corn and melons; and they turned their hogs into the "bush" to live on shack. They succeeded in rearing a variety of hogs, which had noses, as the old settlers used to say, long enough to reach through the fences and take five rows of potatoes, and hence were called "five-rowed" hogs. The corn, however, has become acclimated, and now marks an important boundary of vegetations, and gives a variety possessed of qualities scarcely equaled elsewhere. About the same time the ever-restless Yankee, with his peculiar ideas of climate and crops, reached our eastern shore. He brought his labor-saving implements, but he did not forget the ideas he had learned in New York and New England. His flint corn was laid away; his cucumber and squash seeds were carefully kept from the obtrusive mice. The spring came, the oaks put on their "gosling grey," the seeds went into the ground in the fields, and the "garden sass" filled that important patch in every true Yankee's household economy.

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The warmer summers and richer soil than he had known before, forced all forward as he had never seen "at home." He was pleased with his new residence, but began to sigh for his native Seek-no-further, Baldwins, Greenings, Spitzenburgs and Newtown pippins. The highly flavored quinces yet lingered in the memory of his good wife. It took these to make contentment in the new home. The nurserymen of the east had invented the melting Bartlett, and a long list of other pears; also the Imperial and a long column of gages, green, yellow, red and blue, plums unnamable, with prunes, had sprung up in their nurseries, like strawberries each was better than its predecessors, if the advertisements were to be believed, "good, better, best, very best," and the adjectives of quality would have gone on to infinity, but the language failed. The Yankee is a reader, and the nurserymen knew it; they also knew the power of paper and ink, and used it with success to themselves. Orders went from Wisconsin; and packages of trees came back bearing labels, sometimes as near the truth as were the labels attached to basswood hams. Let those who tried the experiment answer what was the result. Some men have ever since shrunk from a cold stove. Some by making new orders on the east, are still burning their fingers, in the vain hope that the beautiful thing is not as fiery as it is represented. Other classes driven out by the hand of oppression have reached here from over the ocean. One of these cannot subsist, without what next to his mother's milk was the food of his childhood. Even the "nasty" bug cannot overcome the Irishman's love for potatoes, and so these were planted where neither Canadian nor Kentuckian would have thought of raising them. Yet another class have a remembrance of the vine-clad hills along the Rhine, and that remembrance, after the foreign grapes had failed, has covered many a trellis with the native vines; and the luscious clusters ripen and tickle the palates of our people, with better grapes than grow on the vines of Pennsylvania. Our melons are unrivalled in size and flavor. On the whole much good has already resulted; much more will result from this mixing of ideas; and much more is in store for us, if we will now begin to study cause and effect in relation to climate.

The first thing a good seaman does after a severe storm has subsided, is to try and catch a glimpse of sun or star, and then fix his location in the trackless ocean. So we after the losses we have sustained, should look for our lines of climate, and fix our location in the regions of vegetation. Here, on this map, I have, as I believe, fixed the meridian sun, and the polar star, and traced the course of their excentric ecliptics and circles. Taking our bearings from these, there will be but little difficulty in fixing our latitude in the unexplored regions of of western vegetations. South of this isothere of seventy we have all those annuals that require a high degree of summer heat, continued during a period of ninety days, that seventieth degree gives us dent corn, melons, tomatoes, sweet potatoes, tobacco, and many other semitropical annuals. Here too, the grape vines that have been buried in the ground in winter, put forth and ripen their great clusters, earlier and sweeter than on Kelly's Island, or in New Jersey; the sun has shined brighter and hotter. See with your eyes, why grapes can be grown the entire length of the Mississippi, and yet not in Sheboygan; and why they often fail in Milwaukee two degrees of latitude south of St. Paul, and on an isotherm five degrees warmer;

M.—Hor.

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the one place is north, the other south of this, our vegetable latitude—this isothere of seventy. Here and there, some spot may be found, with a warm soil, where mountain ridges or hills hem in and protect it from cold winds, or where the sun's rays are reflected on a central point, where waters reflect light by day, and give out their heat by night; such are places where some of these plants will thrive beyond this isothere; but such places are exceptions to the rule. This isochimene of 20 degrees, when read by the light of science, tells us, that we are placed just on the extreme northern limit of the apple, and many other trees and perennials. Here we see the cause of the losses during our winters; why apples can live in Sheboygan or even Manitowoc or Green Bay, and perish in Vernon county. The former places are south, the latter north of our vegetable polar circle.

On either of these lines, which are averages of temperature, there may happen a maximum of heat or cold, fifty deegrees above or below. Then on this isothere the thermometer may mark 120 degrees in the sun, or placed on the ground and covered slightly with mould; a still greater degree. So on the isochimene, the thermometer may fall to thirty degrees below zero, and instances of such extremes of cold are not unknown, and have lasted for three days at a time. It is well established that trees and plants will perish when exposed to a certain degree of heat. The degree differs with different plants. Some perish with the cold, above freezing point, and some can endure the severity of the Arctic regions, and thrive surrounded by perpetual snows, where the spirit thermometer at times marks seventy degrees below zero. Other trees and plants perish at all points between these extremes. The peach tree is destroyed near the point of ten degrees below; the pear and plum and cherry can endure a few degrees lower, and the apple most of all our fruit trees; yet most varieties of these at last succumb to thirty degrees below. We are then taught by these lessons, that those tender trees which we so much desire to raise here, are on the extreme limit of their possible growth, and require some protection.

These lines are drawn on this map by the readings of the thermometor for thirty years, and by the still more vigilant annotators of every hourly change in temperature the vegetables of the state, that have been growing as annuals and perennials. We cannot gainsay the evidence. Is this a permanent condition of climate, or is it something that can only be proved by the experience of thirty-five years? to those from the eastern side of Lake Michegan, where isothermal lines run paralel to lines of latitute, the crossing of those lines here are anomalous, and the question arises whether these few years of education is teaching the truth? As nature works by laws, and this fact appears to be the work of some natural cause, what is the cause that here makes divergenciess not found elsewhere on the face of the globe? Why these lines cross each other at such angles, why the heat of summer is so much above, and of winter so much below other places on the same isotherms and latitudes; why the east and the west sides of the state have such differences of climate, are points about which mankind is greatly in the dark. The causes that have produced them have thus far scarcely received a thought, even from the scientists of the age. When the consequences arising from the causes that result in locating our isotheres so far north, and our isochimenes so far south, are considered, they deserve

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a careful examination, to see if we can arrive at a correct solution of the causes. When the cause is known, we may then apply a remedy to some, and an amelioration to the worst of the conditions.

The most reasonable position and the one on which all are agreed, is to refer the peculiarities of climatic condition of a country to the currents of winds that pass over that country at different periods of the year. Not the winds described in our school geographies, caused by the atmosphere being heated at one point and rising up, and thus creating a vacuum, and the surrounding air rushing in to fill the place made vacant; but a wind that moves over the surface of the earth not unlike a current of water. The isotheres and isochimenes in this state are abnormal, when compared with similar lines in other states and countries; and we are therefore authorized in concluding, that the winds that cause the abnormity, reach here in conditions, or come from different sources, than do the winds that reach other countries. The fact that these lines are located and run as they are proved, and as marked on the map, is susceptable of proof. With that fact we have to deal, not with some supposition, based on observations made in other countries, states and regions. The heat of our summers, and cold of our winters can no more be determined by observations taken in New England and New York, than by simliar observations taken in Asia, Ireland, or New Zealand. Such observations would be truths there, but here they would not be even approximations to truth, because other conditions exist and govern the winds in these different regions.

I said, that in my opinion, the winds move in strata over the surface of the earth. It now appears that they move in cycloids as well as in strata, and different strata have different foci for their cycloids; that the stratum of winds that moves in one direction is broken through, and another stratum moving in a different direction takes its place; and that the breaking of the denser stratum and letting in the lighter, causes the rise and fall of the barometer. The meteorological observations, now being taken in this and other countries is fast developing this idea; and it is only alluded to here for the purpose of calling attention to a scientific discovery that is just beginning to loom up from the horizon.

The ultimate cause or causes that produces a current of wind over any country; why winds blow in the direction they do, that is, what cause or causes first sets a current of air in motion in a given direction, need not be discussed nor decided, in order to elucidate the points we are considering. We know that the winds above us blow in strata, now in this direction now in that. Whether the same stratum blows in different directions, we do not know; but we know a change of wind however sudden is always preceded by a calm. We know from carefully kept records of the directions and velocity of the winds, that in all countries, the winds blow more in one direction than in any other; which are thence called the prevailing winds of that country. Whether other strata fall upon the surface, or the foci of the wind cycloid has changed its position, or the current itself be reversed, makes no difference to our argument; our prevailing winds are westerly, that is, between S. SW. and N. NW. And to that prevailing wind we must direct our inquiry.

Climatologists have established the existencee of a certain physical phenomena, on so firm a basis, that no man with any pretentions to scientific information will

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dispute their existence. Using these phenomena as axioms, most, if not all, the peculiarities of our climate, may be accounted for; even to the discovery of the cause of the abnormity of our isotheres and isochimenes, when compared to the states east of us. The benefit to be derived from the discovery, will be readily seen. The cause being known, it will then be possible, also, to discover the means of guarding against some of the injurious effects, or, at least, modifying their influence.

Why then is this northern limit of the pear, this isochimene of 20 degrees located from northeast to southwest in Wisconsin, and continued sinking until on the west side of Iowa it is at the 42d degree of latitude, while east of lake Michigan, it is at the 46th parallel; and before leaving Montana and less than 600 miles northwest of the Missouri crossing, it passes above the 49th parallel? This must be caused by winds. From whence have they come? What is the condition north of here? There are no mountain ranges west of the extreme westerly end of the Laurentian chain, that ends near lake Nipigon, and in the high lands that separate the Lake of the Woods from Superior, until we reach the high lands at the head of the Assiniboine. From where the waters of the Missouri and Mississippi flow southerly, and interlock with the water of the Red and McKenzie rivers, that flow north, is only a vast plain, filled with rivers and lakes, arms of the Arctic Ocean, or Hudson Bay. On the northern skirt of this plain, is situated the meteorological poles of no magnetic attraction, of winds and cold. The pole of magnetism to which all our needles point, is not at the earth's pole, as is commonly supposed, but is located at the crossing of the meridian of 97 degrees 30 minutes west, and the parallel of 80 degrees north. At the crossing of the 105th meridian, and the parallel of 84, is the focus of greatest cold in this hemisphere; where the annual temperature is five degrees below zero. About midway between these points, is the focus about which the winds circulate from left to right, or contrary to the hands of the watch. (See Enc. Brit, Vol. XVIII, Art Polar Regions; also Smithsonian contributions, Vol. 6, 1854, Treatise of J. H. Coffin). One is there reminded of the picture of revolving winds, drawn by Virgil,

> "Where in a spacious cave of living stone,
> The tyrant Eolus from his airy throne,
> With power imperial curbs the struggling winds,
> And sounding tempests in dark prisons binds,
> This way and that the impatient captives tend,
> And pressing for release, the mountains rend."

Winds that Eolus afterwards let loose upon Eneas and his companions, which "danced aloft in air, and skimed along the ground." Though not imprisoned, yet here these winds revolve around, and like all other ponderous bodies revolved in a circle have a tendency to fly off in a tangent. They pass freely over this immense treeless plain of mosses, ice and snow, and over Hudson's Bay. To these may be attributed the icefloe along the west coast of Greenland, and through the straits and channels that lead into Baffin's Bay from the west. On the south this revolving wind is hemmed in by the Laurentian chain from blowing with full force on Canada and the eastern states. On the southwest, they are restrained by the chain of mountains that extend along the west side of the McKenzie, till they reach the Missouri and Mississippi. At that point, winds that have been seeking a tangen-

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tial outlet, find an opening some four hundred miles wide. The center of that opening is about the 100th meridian, and is directly north of this greatest depression of the isochimene. Through this gap in the mountain chains, that current of winds rushes, attended with all the consequences of winds passing through gaps. One of these consequences, Maury asserts, is to diminish the temperature. Without stopping to discuss that point, these will be conceded, that winds cooled below freezing point, and passed over bodies of open water, are made warmer, and cooler when they are warmer than the water. Thick woods exercise a similar effect.

This great wind gap is also on the shorest line between the extremes of heat and cold. North of this low point of the isochimenes in Nebraska the cold focus is but 48 degrees of latitude, and from the north line of Dakota where the gap really exists, it is but 31 degrees, to a place that has an annual temperature of five degrees below zero. In Europe, on the same paralel of latitude, this same cold point is nearly fifty degrees distant; mathematically it can be demonstrated, and experience proves that the nearer a place is situated to the pole of greatest cold, the greater will be the degree of cold at that place; this place is no exception to the rule. Therefore here the winds in winter not unfrequently show a temperature diminished to forty degrees below zero; and in that condition they are crowded through this gap. From thence they flow over the states and territories to the south, until they take up their normal direction as westerly winds; they meet no obstruction to turn them aside; no open water or forest to elevate their temperature, until they reach the Mississippi on our western border. These winds are charged to saturation with moisture, as is manifest from the mossy character of the vegetations of that region; and also, because as they cool the atmosphere already here before them, the condensed vapor is increased in quantity, and thus give to us so many cloudy days in December and January. The clouds thus formed prevent the sun's rays from penetrating to the ground to raise the temperature, as they would except for the clouds.

The consequences of such conditions of climate, during the winter months, appear conclusive as to their effects, and the argument examined in every form, is irresistable and irrefutably proves that these isochimenes must be located as we find them west of the great lakes, and in the limits of the open lands.

But why this rise after we reach the state of Wisconsin from the west? What has sent these isochimenes off to the northeast? Long before those cold western winds can possibly feel any influence from the open waters of lake Michigan, they have been affected by some cause. That cause is no mystery to the reflecting, observing man. Timber in oak openings, groves and large bodies have been encountered by these winds as they reached the Mississippi; farther on in Wisconsin the dense woods of deciduous trees and thick evergreens occur. See how the lines of the annuals climb to the north as they reach the eastern half of the state! What a lesson is here taught by nature, of the influence of trees in modifying climate! Who can see this proof and not be convinced? See again how this line is kept up by the thick woods of Canada and Maine. These woods have warmed winds that have come from where,

> "He, far voyaging, from home and friends,
> Too curious with a mortal eye to peep
> Into the secrets of the Pole, forbid
> By nature, whom fierce winter seized and froze

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To death, and wrapped in winding sheet of ice,
And sung the requiem of his shivering ghost,
With the loud organ of his mighty winds,
And on his memory threw the snow of ages."

As I have intimated the protecting influence of the thick woods and especially the evergreens, the open waters of the Lakes, and the Laurentian mountains behind which Canada lies, restore the isochimene of twenty degrees to what may be called its normal condition, because these winds so cold on the Missouri, have been moderated in their eastern course. Here is a very proper place to make a note on the peculiar climate found on the eastern shore of Lake Michigan. The strip of country in which the peach may be grown certainly, is a very narrow one immediately adjoining the Lake shore; where no westerly winds can reach it but such as have passed over the lake, whose waters are always open during winter, and ready to impart some of their warmth to the atmosphere; and thus raise its temperature to a point, that will not injure the trees. A few miles inland, two causes operate to kill trees. A cold wind which has passed around the south end of the lake, strikes the land and trees within its sweep; and the people, also without regard to consequences, have in that state done what has been done in Ohio, New York and New England, cut away the protecting trees, and thus let in the cold winds, and brought about a condition of climate approaching that of the states west of Lake Michigan. If the same practice be continued by the people of Michigan, their peach belt will grow narrower and narrower; and it is possible that it will finally be confined to such localities as shall preserve or cultivate belts of trees immediately adjoining the Lake. Peaches are also grown along the southern shore of Lake Erie for a similar cause.

I now leave this part of the argument, simply submitting that I have shown why the isochimenes are so greatly depressed in the west side of Lake Michigan; and that as this depression is the result of natural causes, its continuance may be depended on. I have also hinted that some of the injurious effects may be obviated, by the use of means within the reach of every man possessed of forty acres of land —the use of tree belts, and especially evergreens, of sufficient compactness to break the westerly winds.

The next question presented for our consideration, is to account, by natural causes, for the even greater abnormity of the isothere of seventy degrees during summer. In all other regions this isothere is always south of the isotherm of forty-five; though it approaches near it just east of the Caspian sea in Asia; on account of the very hot character of Arabia and Persia; and in the current of the southwest monsoons of the Indian ocean.

To account for this, caused me much more difficulty and more thought and study, than did the bend of the isochimene. As the winter depressions could be traced to the existence of winds, which had come through the great northern wind gap, so I concluded that this summer elevation might find its cause in winds, that also existed on the western plains; and a study of them appeared proper as indexing the cause. Currents of wind, like currents of water, may be traced backward to their source, as well as forward to their object. The prevailing winds in summer were south of west. Tracing this course we reach the open dry plains, treeless from

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their aridity; where the sun during the entire summer months, pours down on the parched earth the full force of its rays, through a cloudless sky, making a climate almost unendurable for its great heat; and where breezes are very simoons. This plain and region of hot winds extend over Nebraska, Kansas, eastern Colorado, Indian Territory, Texas, New Mexico, and the eastern states of Mexico. The mountain ranges trend from Long's Peak southwesterly; and the Ratones, near the 38th parallel, shoot far out into the plain, and terminate in Fisher's, one of the loftiest peaks of the chain; after which their sweep is almost circular west, southwest, south, southeast, till the lofty peaks and mountain chains near the city Puebla in Mexico are reached, and thence southeast by east to the isthmus of Darien. Their whole trend is best adapted to bend a current of wind from the east up over the plains. And as I believed I was on the right track, I began to collect my memory of books.

Between the tropics the trade winds blow over the Atlantic ocean towards the equator, from the northeast and southeast, so says the geography; but the more scientific say they blow towards a calm called the *doldrum*, at their point of meeting, where rains fall almost daily. This calm is also the belt of greatest heat, averaging ninty-seven degrees for the year, with but very slight-variation, except in the sunshine. It is about one hundred miles wide, and in the Atlantic is on the north side of the equator; and varies with the ascensions and declinations of the sun from solstice to solstice. In South America, the Carribbean sea and Gulf of Mexico, it varies from two to twelve degrees of north latitude, greatest just after the summer solstice, and least after the winter. In January this hot belt passes over the northern coast of South America, across the Carribbean sea, and the Isthmus of Darien, where it meets the northwestern monsoons, and suddenly drops off to several degrees south of the equator. The southeast trades then blow across central America. In July the hot belt rises among the West India Islands to twelve degrees, and strikes the coast of Honduras, and there under the influence of the suns rays on the land, the chains of mountains, and the southern monsoons that are at that season of the year blowing from the southeast over the Pacific coast, it is carried up nearly or quite to the city of Mexico—latitude 15 or 20 north. In Central America and Mexico it has been hemmed in by the mountain ranges, and as these mountains have condensed its vapors, the rains nearly cease; and the belt is again broken off; but commences about the 100th meridian just south of the equator, and crosses the Pacific on that side. Near the tropics are other calms and rains, dividing the trade winds from the "variable winds," as they are called; these last, in the northern hemisphere, generally blow from a westerly direction. All these calms sympathize with the equatorial calm, following the sun; and are separated from 24 to 30 degrees from the *doldrum*.

From these facts it is manifest that the shortest line between the equatorial calms and the northern focus of the polar winds and cold, is about the 100th meridian, where in July the line is only sixty-five degrees from the belt of greatest heat to the point of greatest cold; consequently, on and just east of that meridian in the region of prevailing winds, and from that cause alone, we might expect to find the greatest extremes and most sudden changes, as the winds blow from the one or the

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other of those extremes; hot from the equator and cold from the pole. The centre of that reduced meridian is in Dakotah territory, and west of the southwest corner of our state, and at that point the isothem of 45 passes as it should mathematically. The same point is in summer also as near the belt of greatest heat as is Lyons in France, and from that cause as warm a summer might be expected; it is also as near as Philadelphia.

In passing over this region, a current of wind that has been over Cohahuila and Chihuahua in Mexico, New Mexico, Texas and Kansas, has passed no large bodies of water that could cool it, no woods that could modify the heat; but all the way it has been passing over treeless plains, where the sun had poured down the full strength of its rays. If it passed a mountain peak, that only tended to wring it drier of any mosture it had retained or gathered on its way. The mountains had not only deflected its course but they had been volcanic, and under the influence of the sun's rays had by that means also increased its temperature.

But there were other causes and other phenomena tending to prove that here was the track of the summer winds. The great circle of no magnetic variations, or the magnetic meridian if it may be so called passes from the pole of magnetism through the centre of Lake Erie, North Carolina, San Domingo, and across South America to a southern magnetic pole. At one pole of this great circle, was the great northern focus of winds. This cause is yet indeterminable; but enough is known of its influence to forbid its being overlooked. Another focus is located in this great circle between the *doldrum* and northern tropical calm, yet as movable as are the calms. The meteorological observations that are being taken are developing the fact, that about that focus, the storms of the United States are revolving, and consequently the winds. The tornadoes and cyclones that arise in the northern tropics of the Atlantic, and east of this meridian, at first travel to the west, until they have passed the magnetic meridian, after which they revolve by the north in a circular manner, until they have again passed the same meridian, and thence travel off to the northeast, often nearly across the Atlantic. (Is there another focus in the centre of the sea of Sargasso?) Their track appears to be a parbola, but it may be an ellipse. The analysis of nearly a hundred of these tracks, have shown that their focus is near or south of San Domingo, and not far removed from the magnetic meridian. None have been known to turn to the south, or to rise in, or across the equatorial calm. Those tornadoes that rise outside of this general track, always take up a line of travel parallel to the nearest part of the general track. All that rise east of the magnetic meridian travel west and cross it, and swing around; those rising west of the focus pass north and northeast, and those rising between the northwest and northeast of the focus travel northeast and east. All these tornadoes in the northern hemisphere revolve on their own axes, from left to right, the same as the great northern whirl. In the southern hemisphere they revolve in the contrary direction and have other foci about which they revolve. Sailing charts note this fact, and well informed captains take advantage of it to sail out of any tornado in which they may be caught. The axes of tornadoes are nearly perpendicular to the earth's surface, the tops in advance of the point of contact. And the whirl never passes into a stratum of winds passing in a contrary direction from

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the surface current, which is always blowing in the direction of the track of the tornado. Tornadoes of small diameter have, however, been observed in the upper air with horizontal axes, and their sharp points, as it were, boring screw-like through the atmosphere. Such are always accompanied with severe lightning and hail. The gulf stream flows as nearly in the track of the tordadoes, as the conformation of the land will permit.

As a corrollary from these facts, from the great cause that forms the track of the tornado and the gulf stream, I assume that all currents of air passing parallel to that track, and within its influence, are also turned in similar and parallel tracks. The meteorological observations are fast demonstrating this conclusion, formed before these observations began.

What cause or causes produce this phenomena, are as yet hidden in undiscovered laws of nature; and perhaps always will remain so hidden. Most of them have received attempts at explanations. Many of the theories advanced for their explanation, are more easily refuted than sustained; and I content myself with stating the facts, and give no theories. For, who can tell us why the winds circulate around the northern magnetic pole from left to right; why the tornadoes in the northern hemisphere revolve in the same direction, and why liquids in a funnel do the same, while in the southern hemisphere they all revolve in the opposite direction? Equally mysterious are the phenomena, that cause the atmosphere within the tropics, and between Africa and America, to travel slower than the surface of the earth, and so cause the trade winds in that ocean to blow continuously from an easterly direction, while on the east side of Africa in the Indian ocean, the winds are one-half the year from the northeast and the other half year from the southwest; at the same time on the west coast of America, in the Pacific ocean, the winds blow half-yearly from the southeast, and half-yearly from the northwest. According to all laws now known to physics, one and the same cause acting in the same manner, cannot produce these contrary winds between the same parallels of latitude, nor the different directions of the winds in the different strata over the same place. Not less unhidden is the cause that revolves the tornadoes among the West Indies around a focal point towards the north, and that place, that point on or near the magnetic meridian. The gulf stream also makes its bend, and at the same point; and the oscillations of the barometer, in the United States, are also in lines, which always point to the same focus; a corresponding focus also exists in the Pacific ocean near the Spice Islands. The mystery is still further increased, in that, when the turn has once been made, and the magnetic meridian is crossed, the unseen and unknown influence that held, moved and governed these mighty forces, should seem to leave them free to act; unless purchance the counter focus, exists over the coast of Africa. Mysterious as these phenomena are, they are as well established as are any of the physical facts, and are provable by numerous observations taken at many points, and continued and computed for many years. Who is prepared to give a reason for them all; contradictory as they may appear when delineated on a map or globe, and taken in at one view; and to defend his reasons from the attacks of the sceptical, or from those who may assert another equally plausible theory?

There is another phenomena that has an influence here, and deserves a notice.

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The northeast storms of winds that blow and rage so violently, and even destructively on the Atlantic coast from Newfoundland to and across the magnetic meridian in North Carolina, seldom reach the coast of Georgia; and though they may readily pass up the valley of the St. Lawrence, and do rage with great force and severity on lake Ontario and Erie, the winds seldom reach Michigan and Indiana in force, and never blow with severity in Wisconsin, or west of it, as far as the Rocky mountains. The rains and snows accompaning such storms pass the plains to the mountains; so do light winds from the northeast. The severe winds never go there. Who can account for the fact that these mighty winds are broken just after crossing that line? In a word, why are all easterly winds thence revolved backwards, or abated to gentle breezes; while westerly winds pass the same meridian without retardation or alteration of direction, often with accelerated speed?

To return to our stand point in Central America or at Mexico; east of us lies the Atlantic where the trades are always blowing from the east; we are in the hot calm now raised up by the sun over the northern tropic. The mountains have wrung out the rains, the sky is cloudless, and the heat is even greater than among the islands of the Gulf; we are fifteen degrees north of the equator, may be twenty by the speading of the belt at this point. Yonder in the east and ten or twelve degrees north of our warm belt, is the anomalous bend of the tornado track, around which the winds and storms and the barometrical oscillations revolve. The arguments grows into a conclusion: here lies the track of our summer winds.

Now if we were to represent these ideas on a map of North America, by tracing these wind currents, by arrows, we should have a view of the hot winds carried to their ultimate effects by the phenomena we have found existing. One current starts as a northeast trade wind in the Atlantic, and coming near the *doldrum* on the magnetic meridian, it is bent westerly and goes over Mexico, Cohahuila, Chihuahua, New Mexico, Texas and the dry plains east of the mountains, bending more and more, but parallel to the tornado curve; the mountain ranges assist to make the bend. In all this route it has passed no woods, no open water, nothing by which it could lose a particle of heat, or from which it could gather a drop of moisture; on the contrary, the few mountain peaks and high lands have only served to wring it drier of whatever moisture it contained, when it was over the high snow-mountains in Mexico. The current nearest to the mountain range has felt the rays of the sun falling through the clearest and driest of atmospheres, and also the influence of the volcanic and highly magnetic rocks and minerals; in summer there was nothing to cool the fervid heat by day, and the earth remained heated by night. Such a current has passed up over the Missouri, through the wind gap into the valley of the Red river of the north. No wonder it is hot there.

The map will tell another fact. Measure on the 100th meridian, from the hot belt at the city of Cuernernavaca, latitude 17, and it is but 22 degrees to the south boundary of Dakotah; thus that boundary is as near the hot belt as the city of Morocco in Africa. Southwest Wisconsin is equally near, and has a tropical summer. At the same time the direct rays of the sun, situated at or near the tropic of Cancer, warms the ground and the northern winds, thus shortening the radius of the northern circulation, and so gives the hot summer winds an opportunity to beat back the cold winds from the north.

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When to the influences of the causes I have named, for producing the great divergeance of this isothere we add the clearness and aridity of our atmosphere, which offers no impediment to the sun's rays upon the surface of the earth, the case appears to be conclusively made out, from natural causes, and it is safe to assert, that the lines we have delinated, are climatical truths, that will exist while the same phenomena shall remain.

The great bend on the dent corn line to the south along the east side of the mountains, is the effect of the elevation of that country. If that elevation was removed, the northeren bend would have swept around through Montana and Idaho to San-Diego. After that line has crossed the Rocky Mountains near the 35 parallel, it is sent back under the influence of the hot winds that have come up the Rio Grande, with the monsoons in the Pacific, around the Salt Lake, one of these currents has passed through the mountains near the city of Mexico, and has been joined by the monsoon over the *Tierres Calientes*, western Chihuahua, Sinaloa and Sondra, and thence has passed up over Arazona into Utah. Thus this isothere is again carried back on the 43 parallel at an elevation of 7,000 feet. The same current but cooled somewhat from the elevation, is hurled through the gaps and mountains, where the old roads to Oregon and California used to pass, and where the Pacific railroad now goes; and finally joins the currents on the east in the valleys of the Saskatchawin and Assinoboine. This is the current of warm air that clothes the valleys at the heads of the Missouri, Columbia and the Red rivers with grasses and trees, at an elevation above the sea, where the European climatologists mark their region of perpetual snow, for that latitude. In New Mexico and Colorado, at the upper valley of the Rio Grande, these same currents produce Indian corn as a sure crop, 1,000 feet above the European line of perpetual snow; and the veritable snow-line is not found until double the height given in our school geographies is reached. Here is another indubitable proof that the currents have come from the hot south. It shows another fact that the statements in our text-books, laid down and received as axioms, are false, and that we are teaching our scholars falsehood when we put these into their hands; thus making it the necessity of some one to unlearn them what has been learned amiss from these uninformed or antiquated teachers.

If we were to examine the perennial indigenous vegitations of this state, carefully studying their character and capacity to endure the extremes of heat, drought and cold, we should thereby arrive at the same conclusion that we have now reached by the use of the thermometer, and by arguing from the physical phenomena. Scarcely anything has yet been done in the examination of vegetations, with reference to their indexing climate; and yet if we think how these are exposed to every change, feeling and noting every moment the least change in temperature, growing or dying as the heat increases or falls, thriving or paling as the light is taken away, there appears to be no line of examination that would be attended with more important results to the interest of the agriculturist, than could be thus secured; or from which the scientific could gain more absolute knowledge. I can only hope that men and means will yet be found to enter upon this field, and after full investigation point out the utility.

The argument is now ended, and we have learned that certain degrees of heat

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and cold may be expected each year, in this state, and at each place in the state, we may know by the means of such studies as I have but touched upon, how warm the summers will be, and how cold the winters; and then if we can apply that knowledge to the plants we may desire to cultivate, we can determine before trial whether they will live, grow and ripen their fruit or not, wherever we desire to plant them. Though as compared with some other countries, the extremes here found may be considered abnormal, yet when they come to be properly understood, and the practice of our people made comformable to them, even these very extremes may be made productive of many of the most valuable blessings of this climate; and our soil be made to yield many luxuries, found only in what are usually denominated more favorable climates. We have heretofore oftener failed by attempting to rear plants not adapted to our climate, than from any absolutely injurious character of the climate itself; we have too much followed the climate of some other country, and not our own; we have planted tender trees where we should have planted hardy ones, and have sought our luxurious fruits on trees, when we should have looked for them on vines that we could protect, and on annuals, that lie hid in seeds in winter, from the effects of frosts. We have planted peaches and pears, without proper protection from our inclement winters, when we should have planted grapes and small fruits that we could protect, and melons, tomatoes and fruits that grow from seeds and so require no winter protection, and only ask for sunlight, moisture and heat to ripen. Plants that require a great degree of summer heat, and will mature in ninety days, here may be relied on to perfect fruit. Our oldest inhabitants will scarcely call to mind any instance where corn has been damaged by frosts in summer, except perhaps in some locality that might be denominated frosty; and we have less of such localities than can be found in any state east of lake Michigan. This freedom from frosts may be attributed to the great degree of heat imparted to the ground and water during the day, which cannot be extracted during the night, so as to reduce the atmospheric temperature below the freezing point. When frosts have damaged crops here, they have done it in the fall, and it was the result of late planting oftener than the fault of the season. When the frosts of winter are broken, and the wind-currents from the southwest have taken the place of those from the northwest, all tender plants may be safely entrusted to the open air, to commence their summer growth. The same observations that have established the isotheres, have also determined, that as a rule, the last half of May and the first half of September may be expected to have an average heat, nearly or quite as high as the three summer months, and as clear of frost; this is particularly true of the southwest portion of the state, including most of Dane and Rock counties. Our changes of seasons from winter to summer are abrupt; generally with a dry autumn, well adapted to give the farmer ample time to complete his harvest and prepare for the severity of winter.

Among the crops we may safely depend upon as succeeding under such a climate, I will name but a few. Dent corn must stand first, and will ripen in 70 days from the time it appears above the ground. Sorghum may be planted a little earlier, and mature in 90 days, melons grow in 70, and grapes vary from 70 to 100 days. All these are greatly advanced by the degrees of heat they receive during July and

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August. Sugar beets, and we can grow these better than any other country, mature in from 70 to 90 days. Add to these sweet potatoes, which will mature well in 90 days after they are planted out on warm sandy soils; tomatoes and tobacco, that will never fail up to the isothere of 68, (these three last should be started under glass, so that the plants can be in the open air by the 22th of May,) and we have a list of crops of great value to the agriculturists and giving to the gardener almost all he needs. A few dollars expended for glass, and a little labor in making the hot bed, enables us to anticipate many of our fruits and plants by weeks, and the money and time are well expended.

I have now answered the questions with which this paper started, why apples peaches and pears may be grown with success in Michigan and further east, and why they cannot be grown here. I have also answered another question less frequently asked, but none the less important: why can grapes, melons and sweet potatoes, and other almost tropical plants, be grown with such success in Wisconsin, Iowa and Nebraska, and even in most of Minnesota, when they cannot be grown in Michigan, New York and New England? Their isotheremal lines and ours do not correspond. Another inquiry is also answered: why do those varities of apples that are hardy enough to stand our winters, and which are winter apples when grown in the states east of Lake Michigan, become fall apples when grown in the western states? It is owing to the great amount of summer heat that they receive here during their period of growth, and the degrees of light from the sun shining through our clearer atmosphere. Here we must have varieties of trees adapted to our climate. If we cannot get these by importations, we must make them by planting seeds.

We cannot grow oranges here, though our summers are sufficiently hot, unless we call in the aid of glass, and fire in winter, by which the atmosphere surrounding the trees shall be held at the proper degree of temperature so as not to destroy the vitality of the tree; so too we cannot grow some varieties of apples and pears, without the aid of such protection as shall keep the atmosphere that surrounds the trees at such a degree of temperature as shall not destroy their vitality. Trees and tree-belts will give us this protection from the cold, by their power to equalize temperature.

Nature in her great book is here our teacher, and we should learn and remember her lessons. She tells us that under the influence of thick evergreens the thermometer will not mark as low a degree of temperature, as where such influence is not felt. The difference is often as much as 20 degrees in favor of the trees. Other trees have more or less influence, in accordance with the compactness of the trees, and the resistance they oppose to the progress of currents of winds; and to the amount of branches that cover the ground, and thus prevent radiation from the surface. This influence is seen on the map by the rising of the isochimenes to the north, and to their normal position, before the cold winds have reached the influence of the open waters of Lake Michigan. This is first seen in the timbered counties north of the Wisconsin; but is more and more increased when the pines and other evergreens fairly set in to give their influence. Here is a fact that ought not to pass unheeded, for here we see trees raise the winter temperature through ten de-

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grees of the thermometer, and four degrees of latitude; enough when applied to Dane county to enable us to rear pears and plums, and in Kenosha to save the peaches. Nature teaches this, and these isothermal lines have but put the lesson on paper, which she had long before written on the face of the state. We but do our duty, if we heed the teaching.

To the follower of this great instructor, the student of nature, the reward is sure; if he be a Yankee he may within his belt of evergreens rear his favorite trees, and eat of the fruits he so much admired in the east, and desires here. All of us can think of locations where naturally the severities of the winter are moderated, so that many tender fruits, which would perish naturally, can be reared with success. If such localities are carefully examined, the protecting influences will be discovered; and then the observer, who has sense enough to discover the influence, can artificially imitate it. Spots are more common, in this state, than we are apt to suppose, where nature with but slight assistance, will give to the fruit-grower much that he desires, and which he cannot have from unassisted nature. The means are at hand; and the use will more than pay the expense, aside from the advantage gained in changing or warding off the unpropitiousness of our climate. A proper use of trees in belts and masses, will accomplish all that can be done; and by their use, especially with the evergreens, the climate may be so moderated, that the thermometer shall be held several degrees above where it would otherwise fall. I should be glad to pursue this subject of protection, but must not here.

Much of the subject of this paper is new, even to the best informed, in many of f eatures, and if our tree-planters and people shall by my means acquire any knowledge not known to them before, because not taught, or shall be induced to make observations on this important subject of climate, and thus discover absolute truth in regard to the facts and causes, which make us to differ from others, I shall feel compensated for the time spent thereon, even though all my theories are burned up in the rays of truth. Truth dispels ignorance and error, the gold will remain. If the books we place in the hands of our children teach errors in their rules, but at the same time give facts by which the errors may be corrected, it is our duty to read those books, so as to correct the errors into which the authors have fallen, from not having paid sufficient attention to some facts known for years, and others that are daily developing, until other books can be prepared in which the errors are avoided. When these truths of our climate shall be taught, as they ought to be in the schools, and in the agricultural and horticultural societies, then we shall make less failures in our plantings; then even the children will answer the question, why those fruits that grow so well east of us will not grow here? They will also be able to tell what fruits will grow here, far better than they grow east of us; why, wherep eaches fail, the best of grapes ripen so well, and the largest and sweetestmelons can be grown. Let us plant for a Wisconsin climate and not for one east of us, and then we may eat of the fruits of our planting.

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SUMMARY OF METEOROLOGICAL OBSERVATIONS FOR THE YEAR 1870.

MONTHS.	THERMOMETER IN OPEN AIR.				BAROMETER HIGHT REDUCED TO FREEZING POINT.				RAIN AND SNOW.		Evaporation in inches from open vessel.	Amount of cloudiness.
	Max.	Min.	Mean.	Variations.	Max.	Min.	Mean.	Fluct.	Am't rain and melted snow in inches.	Amount snow in inches.		
January	40	—12	17.8	52	29.438	28.088	28.893	1.350	3.25	11	.....	5.7
February	38	—15	20.9	53	29.321	28.000	28.871	1.321	1.35	2	.....	5.0
March	42	—8	27.0	50	29.510	28.376	28.934	1.134	3.85	17	.....	7.0
April	78	25	49.7	53	29.302	28.600	28.949	0.702	0.18	.....	3.50	3.0
May	85	45	65 0	40	29.136	28.289	28.853	0.847	1.09	.....	3.69	3.0
June	98	53	71.2	45	29.149	20.563	28.911	0.586	1.92	.....	5.57	2.6
July	91	58	73.8	33	29.150	28.638	28.888	0.512	5.25	.....	6.55	3.4
August	89	56	67.1	33	29.253	28.557	28.926	0.696	3.65	.....	4.65	4.6
September	83	54	61.2	29	29.279	28.772	29.080	0.507	4.00	.....	2.80	5.3
October	70	29	50.4	41	29.263	28.474	28.936	0.789	2.09	.....	1.39	6.0
November	64	19	28.6	45	29.368	28.278	28.924	1.090	0.53	.....	.....	4.0
December	48	—13	22.1	61	29.391	28.141	28.910	1.250	0.67	4	.....	5.0
Sums	.....	.....	.....	.....	.....	.....	.....	.....	27.56	34	.....	.....
Means	68.8°	24.2°	77°	113°	29.324	28.399	28.919	1.510	.....	.....	.....	4.5

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SUMMARY *of Meteorological Observations for the year* 1870—continued.

MONTH.	FORCE OR PRESSURE OF VAPOR IN INCHES.			RELATIVE HUMIDITY OR PERCENTAGE OF SATURATION.			PERCENTAGE OF WINDS.							
	Max.	Min.	Mean.	Max.	Min.	Mean.	S.	SW.	W.	NW.	N.	NE.	E.	SE.
January	.248	.026	.092	100	52	86	13	27	15	30	9	1	0	5
February	.191	.023	.104	100	35	88	17	23	7	40	2	2	0	9
March	.229	.031	.182	100	45	85	5	8	6	26	18	21	0	16
April	.550	.087	.198	100	21	54	24	8	6	15	16	15	13	3
May	.527	.101	.313	92	22	52	25	12	15	6	7	8	7	20
June	.727	.191	.437	88	21	57	7	13	12	30	8	10	11	7
July	.813	.285	.535	94	24	64	12	18	17	15	10	9	13	6
August	.909	.268	.466	97	34	65	11	37	5	9	8	3	4	3
September	.678	.229	.466	100	42	54	13	2	0	7	2	34	24	18
October	.516	.123	.280	96	36	75	11	16	29	21	4	3	3	13
November	.403	.076	.159	100	30	67	17	23	12	29	11	1	1	6
December	.212	.025	.110	100	29	87	13	10	30	25	9	9	0	4
Sums	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means	.....	.....	.252	.....	.....	63	14	17	13	21	9	10	6	10

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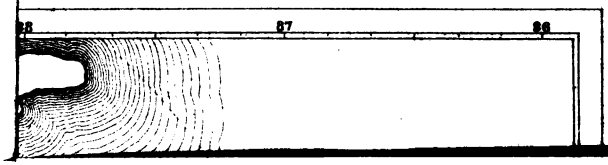

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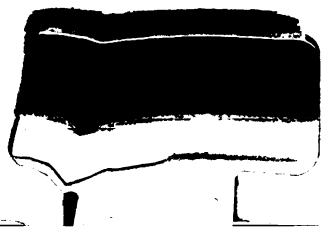

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